

Initial Study

CALIFORNIA
ENERGY
COMMISSION

HANFORD ENERGY PARK

Application For A
Small Power Plant Exemption 00-SPPE-1
Kings County, California

INITIAL STUDY

FEBRUARY 2001
(00-SPPE-1)



Gray Davis, Governor

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CALIFORNIA ENERGY COMMISSION

SITING OFFICE

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SUMMARY

Testimony of Jack Caswell

This review of GWF Power Systems Company, Inc., request for a Small Power Plant Exemption (SPPE) for the Hanford Energy Park (HEP) is based on the project description in the SPPE application filed on May 19, 2000, and additional data response submittals.

The project consists of a 98.7-megawatt (MW) natural gas-fired combined cycle power plant. The Hanford Energy Park (HEP) plant would occupy approximately 5 acres and will be located adjacent to an existing GWF cogeneration power plant in the Kings Industrial Park within the City of Hanford. Electrical energy produced from the proposed merchant power plant will be sold in California's newly created electricity market via the California Power Exchange and to large wholesale customers. Although not part of the current project, cogenerated steam from the plant could provide for the future needs of the Kings Industrial Park.

The Initial Study portion of this document provides an analysis of whether the proposed project will not have a significant adverse impact on the environment or energy resources.

No areas have been identified in the Environmental Checklist portion of the Initial Study as having the potential for significant environmental impacts. In all areas the Commission staff concludes that proposed Mitigation Measures and Conditions of Exemption will ensure that any impacts identified are less than significant.

One biological resources issue is that, as a result of the Endangered Species Act, the project requires a Section 10 opinion from the United States Fish and Wildlife Service. Staff has contacted the USF&WS to discuss the proposed project. To avoid a lengthy Section 10(a) formal consultation the applicant has requested the USFWS to grant coverage under an existing master endangered species permit held by the Kern Water Bank. Under this arrangement, the applicant would purchase habitat credits from an existing Kern Water Bank mitigation bank. The USF&WS indicated that granting of the request is possible. It was determined the project will have a less than significant impact provided the Mitigation Measures and Proposed Conditions of Exemption are implemented.

The Initial Study concludes that, if the section 10(a) coverage is granted as described above, mitigation including conditions of exemption identified in the Initial Study is implemented, the project will cause no unmitigated significant environmental impacts. Staff recommends that the request for a Small Power Plant Exemption be granted.

HANFORD ENERGY PARK (00-SPPE-1)
INITIAL STUDY

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INTRODUCTION

Testimony of Jack Caswell

The Applicant, GWF Power Systems Company, Inc., filed a request for a Small Power Plant Exemption (SPPE) with the California Energy Commission on May 19, 2000. The CEC appointed a Committee to hear the case and an Informational Hearing was held at the City of Hanford Civic Auditorium on August 2, 2000. Since the filing and public hearing, Staff has held a Data Request and Response Workshop on August 3, 2000 at the Amtrak Building in the City of Hanford.

The proposed Hanford Energy Park (HEP) project consists of a 98.7-megawatt (MW) natural gas-fired cogeneration power plant. The HEP plant would occupy approximately 5 acres and would be located adjacent to an existing GWF cogeneration power plant in the Kings Industrial Park within the City of Hanford. Electrical energy produced from the proposed merchant power plant would be sold in California's newly created electricity market via the California Power Exchange and to large wholesale customers. Cogenerated steam from the plant would provide for the future needs of the Kings Industrial Park.

California's Warren-Alquist Act (Public Resources Code (PRC) section 25000 et seq.) gives the CEC the exclusive power to certify all sites and related facilities for thermal electrical power plants of 50 MW or more within the state (PRC sections 25120 and 25500 et seq.). Section 25541 of the Warren-Alquist Act allows the CEC to exempt power plants up to 100 MW from the site certification process if it finds that no substantial adverse impact on the environment or energy resources will result from the construction or operation of the proposed facility.

The HEP is also subject to the requirements of the California Environmental Quality Act (CEQA) (PRC section 21000 et seq.). PRC section 25519 (c) states that the CEC shall act as lead agency under CEQA for projects that it either certifies or exempts from certification. Staff has prepared this Initial Study in accordance with CEQA and Title 20, California Code of Regulations (CCR) section 1934 et seq. and 2300 et seq.

Staff's environmental analysis in the Initial Study documents the factual basis for staff's recommendation regarding the projects potential to result in significant adverse impacts on the environment.

Staff has included conditions of exemption in various technical areas to ensure and verify that the mitigation measures proposed by the applicant are implemented, so that the project will result in no substantial adverse impact. In addition staff will adopt a reporting or monitoring program designed to ensure compliance during project development and avoid significant impacts or the need for further mitigation.

The CEC Siting Committee will conduct a hearing at which all parties will have an opportunity to make comments on the Initial Study and recommendations on the SPPE application. The Committee will consider the application, Staff's analysis, and any other evidence presented in the proceedings in determining whether to

recommend granting the SPPE. Following the hearing, the Committee will prepare and publish a proposed decision. The full Commission will then hold a hearing for final arguments and render a decision on the application.

Title 14, CCR section 15063(d) states that an Initial Study shall contain the following items:

- A description of the project including the location of the project;
- An identification of the environmental setting;
- An identification of environmental effects by use of a checklist, matrix, or other method, provided that entries on a checklist or other form are briefly explained to indicate that there is some evidence to support the entries;
- A discussion of the ways to mitigate the significant effects identified, if any;
- An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls; and
- The name of the person or persons who prepared or participated in the Initial Study.

A 30-day public review period will follow the release of the Initial Study. Comments on the Initial Study may be submitted to the CEC at the address listed below and/or presented at the public hearing to be scheduled on the project.

For further information or written comments please contact:

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PROJECT DESCRIPTION

Testimony of Jack Caswell

PROJECT TITLE

Hanford Energy Park, Application for Small Power Plant Exemption

LEAD AGENCY NAME AND ADDRESS

California Energy Commission
Energy Facilities Siting and Environmental Protection Division
1516 Ninth Street
Sacramento, CA 95814

PROJECT LOCATION

The proposed project would be located in Hanford, California. The HEP plant facilities would occupy approximately 5 acres and will be located adjacent to an existing GWF cogeneration power plant in the Kings Industrial Park. The HEP location is on the southwest quarter of Section 13, Township 19 South, Range 21 East in Kings County situated north of Idaho Avenue, between the existing GWF facility to the west and the Burlington Northern and Santa Fe Railroad to the east. The land uses near the project vicinity are agricultural and industrial; therefore, residential population is low with the nearest residence approximately 3,200 feet southeast of the project site.

PROJECT SPONSOR'S NAME AND ADDRESS

GWF Power Systems Company, Inc.
4300 Railroad Avenue
Pittsburg, CA 94565

GENERAL PLAN DESIGNATION

Heavy Industrial (City of Hanford General Plan)

ZONING

HI - Heavy Industrial (power plant site)
MH - Heavy Industry (electrical transmission route)
AG-20 - Agriculture-20 (switchyard)

DESCRIPTION OF PROJECT

INTRODUCTION

On May 19, 2000, the GWF Power Systems Company (GWF) filed an Application for a Small Power Plant Exemption for the Hanford Energy Park (HEP). The proposed HEP Project would be a 98.7-megawatt (MW) cogeneration power plant that will include a natural gas-fired, with combustion turbine generator (CTG) and a heat recovery steam generator (HRSG), which will supply one steam turbine generator (STG). The proposed power plant will be a cogeneration power plant using natural gas to produce two forms of energy; electricity and thermal energy (steam) up to 284,500 (lb/hr). (Project Description figure 2) Natural gas, which will be the only fuel required for the facility, will be delivered to the HEP site via a 16-inch pipeline. The HEP site will also consist of a 115-kilovolt (kV) switchyard along with 1.36-miles of new transmission line. Water supply will consist of makeup water for the facility's cooling towers, facilities/equipment, and domestic use. Wastewater will be discharged to an existing line that is routed to the City of Hanford sewage treatment plant.

PROJECT COMPONENTS

COMBUSTION TURBINE GENERATOR

Thermal energy will be generated in a GE Frame 6FA-type CTG through the combustion of natural gas. The combustion process would convert to mechanical energy necessary to operate the combustion turbine compressor and electric generator. Remaining thermal energy (284,500 lb/hr) would be directed to the HRSG to be used in the generation of steam.

HEAT RECOVERY STEAM GENERATOR

Transferred heat from the exhaust gases of the CTG to the feed-water would be used by the HRSG to produce steam. The feed-water pre-heater would be the final heat transfer section to receive heat from the combustion gases before they are exhausted to the atmosphere. The condensate would be directed through other components of the HRSG and the steam produced would supply the STG. Steam generation would be enhanced via a natural gas-fired duct burner within the HRSG. The duct burner, which would be a low NO_x design, would generate a maximum of 284,500 pounds per hour (lb/hr) of export steam. The HRSG unit would be equipped with a NO_x control system known as a Selective Catalytic Reduction (SCR) emission control system. The system would entail the introduction of aqueous ammonia in the presence of a catalyst causing a chemical reaction that reduces NO_x. An oxidation catalyst would reduce CO concentrations.

STEAM TURBINE GENERATOR AND CONDENSER

The steam from the HRSG HP super-heater would enter the steam turbine through the inlet steam system; expand through the turbine blade system, thus operating the generator. Once the steam exits the turbine, the steam would be directed into the surface condenser. The condensate would be collected in the condensate hot-well

portion of the condenser then pumped to the feed-water pre-heater in the HRSG. Remaining heat from the mechanical draft cooling tower and circulating water system would be lost to the atmosphere. Additionally a natural gas-fired auxiliary boiler with a low pressure steam capacity of 100,000 lb/hr and maximum heat input of 133 MMBtu/hr (HHV basis) will be installed. The boiler will be equipped with an ultra low NO_x burner system that will achieve a NO_x emission concentration of less than 9.0 ppmvd @ 3% O₂. This system will operate as a backup source of export steam when the combined cycle plant is off-line.

LINEAR FACILITIES

TRANSMISSION

Power would be directed from transformers to a 115-kV switchyard then routed to a new 1.36-mile 115-kV transmission line. The transmission line route as identified in the GWF letter dated October 13, 2000 is now the preferred transmission route. The transmission line route will interconnect with the 115-kV Henrietta-Kingsburg transmission line, which is owned by the Pacific Gas and Electric Company (PG&E). The route will travel west along Idaho Avenue from the proposed project then turn south running along the eastside of 11th Avenue, and terminate at the new switchyard. The new switchyard will be located on a one-acre parcel on the northeast corner Jackson and 11th Avenues. (Project Description figure 1)

The alternative route is described as double "Loop" circuitry and towers and will follow the same route as the preferred transmission line route. Details on the preferred and alternative transmission line route can be found in the Transmission System Engineering section of this Initial Study.

NATURAL GAS

The natural gas fuel, which will be the only fuel used by the proposed HEP facility, would be supplied by a 16-inch-diameter pipeline along a 2.8-mile route. The gas would be obtained via the Southern California Gas Company's 504-transmission pipeline that is located along Hanford-Armona Road. The connection will occur near the intersection of 11th Avenue and Armona Road within the City of Hanford. The natural gas would be expected to be 310 to 380 pounds per square inch gauge (psig) approximately 26,700 (MMBtu/day) with the minimum supply pressure to be 260 psig. (Project Description figure 1)

WATER SUPPLY AND USE

The principal water supply source for the proposed HEP project would be groundwater. GWF has a ground water supply well adjacent to the HEP site that produces water for the existing GWF power plant. The well has sufficient capacity to meet the needs of both the existing plant and the proposed HEP project. The estimated total annual water use by the HEP project would be 850 acre-feet. Approximately 82 percent of this water requirement will be for makeup water for the cooling tower. The remaining 18 percent of the HEP water requirement would be used for the HRSG, CTG evaporative cooler, potable water, general service water, and

other equipment. The source for the remaining plant water would be from the Hanford municipal water system via an existing connection, approximately 18%.

Water discharges from plant operations would be collected in drains; oil contaminated water would be treated at an oil/water separator to remove oil and grease, and then routed to the HEP cooling tower basin. Final wastewater discharge from the HEP cooling tower basin would be directed to the City of Hanford Wastewater Treatment Plant (WWTP) via an existing main. All discharge systems will be constructed and operated in compliance with applicable codes and regulations.

Storm-water runoff would be directed through a series of onsite drainage systems and eventually into an existing percolation pond at the adjacent GWF site. The pond would be expanded to accommodate the 25-year, 24-hour runoff event.

The HEP project will be equipped with Best Available Control Technology (BACT) in order to control air pollutant emissions. Emission control will be provided by a dry low NO_x combustors and Selective Catalytic Reduction (SCR) installed in the HRSG. The SCR system consists of the reduction catalyst and an aqueous ammonia injection system

HEP would be operated as a merchant power facility, selling its energy via direct sales agreements and in the spot market via the California Power Exchange. Energy output and operational levels would vary according to demand in the deregulated California energy market. Electricity prices and operational levels would not be subject to California Public Utilities Commission (CPUC) regulation. In addition HEP will be a source of cost effective cogenerated steam to meet the anticipated future steam needs of the Kings Industrial Park.

SURROUNDING LAND USES AND SETTING

The proposed Hanford Energy Park would be located adjacent to an existing GWF facility in the Kings Industrial Park. The site is located within the City limits of Hanford, approximately three miles south of downtown Hanford. The existing GWF facility occupies approximately five acres within the Kings Industrial Park; the proposed project would occupy an additional ten acres adjacent to the existing site on the north and east of the existing facility. Approximately five acres, adjacent to Idaho Avenue, would be used for the actual expanded plant operations. Agricultural or vacant parcels border the industrial park itself. The nearest residence is located approximately three-fourths of a mile from the GWF existing facility. The existing uses in the industrial park include the existing GWF electrical and steam generation facility and various industrial uses. Located immediately south of the site for the proposed project, across Idaho Avenue, and outside the boundaries of the industrial park, is the Pirelli tire manufacturing facility. The Del Monte processing facility is located south of the proposed project.

The proposed electric transmission route would connect with an existing Pacific Gas & Electric (PG&E) transmission line approximately 1.7 miles south of the expanded facility. A new transmission line would be required between the proposed

generating facility and the new substation, traversing west from the GWF substation on Idaho Ave. and then south along the eastern edge of 11th Ave. The proposed electrical transmission route would require a short tap line in order to connect to the new switchyard and the existing Henrietta-Kingsburg 115 kV transmission line. (Project Description Figure 1)

The proposed gas pipeline route would be routed west and north of the expanded facility. The gas pipeline route is approximately 2.8 miles in length, connecting to a Southern California Gas Company transmission pipeline near the intersection of 11th Avenue and Hanford-Armona Road. 2.4 miles of the gas pipeline route is located within a City public utility easement on the west side of 11th Avenue. The gas pipeline route would be routed north of the site, with agricultural, industrial, and residential uses on the west, and industrial and residential uses on the east. As the pipeline route approaches Hanford-Armona Road, adjacent uses become residential in character. (Project Description figure 1)

AESTHETICS

Testimony of William Kanemoto

INTRODUCTION

The following analysis evaluates potential aesthetic impacts of the Hanford Energy Park (HEP) Project, and the consistency of the project with applicable laws, ordinances, regulations, and standards (LORS), in conformance with applicable guidelines of the California Energy Commission and the California Environmental Quality Act).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

No federal policies relating to aesthetic resources apply to the proposed project.

STATE

SCENIC HIGHWAY PROGRAM

No eligible or designated scenic highways are located within the viewshed of the proposed project.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

IMPACT SIGNIFICANCE CRITERIA

The CEQA Guidelines define a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including...objects of historic or aesthetic significance” (Cal. Code Regs., tit.14, § 15382.)

Under the CEQA Guidelines, significant visual impacts may result from:

- a. A substantial adverse effect on a scenic vista
- b. Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- c. Substantially degrade the existing visual character or quality of the site and its surroundings
- d. A new source of substantial light or glare which would adversely affect day or nighttime views in the area

LOCAL

CITY OF HANFORD

The City of Hanford does not have any specific LORS relating to visual/aesthetic resources.

KINGS COUNTY

The Scenic Resources portion of the Kings County General Plan Open Space Element maintains a system of designated county scenic highways, and provides open space preservation measures within designated 'community separator' areas in order to maintain visual identity of communities in the county. No county scenic highways are located within the project viewshed, nor do any designated community separator areas lie within the project viewshed. There are thus no open space or other visual resource-related policies of the General Plan applicable to the proposed project.

SETTING

The HEP project is located regionally within the southern San Joaquin Valley, a landscape characterized by nearly level, open terrain, with few intervening vertical features to interrupt views to the horizon. The HEP project site is located in an unincorporated area of Kings County near the southern boundary of the City of Hanford. The site is within the Kings Industrial Park, a one-mile by two-mile, partially developed industrial area immediately south of urbanized portions of the City of Hanford. This industrial park represents a transitional landscape of generally low visual quality, located between suburban residential development at its northern boundary (approximately 2 miles north of the site), and scenically intact farmland to its south, east, and west. The proposed HEP site directly adjoins an existing GWF powerplant site and is situated approximately midway between 11th and 10th Avenues on the north side of Idaho Avenue, west of a Burlington Northern Santa Fe railroad track (Figure 1: Project Visual Features and Key Observation Points).

The Kings Industrial Park is overall of low existing visual quality, characterized by numerous large scale industrial facilities, undeveloped lots, and various utilitarian features including existing electrical transmission lines, an existing electrical switchyard, and an existing railroad line. The visual character is generally chaotic in a manner typical of heavy industrial landscapes, although extensive existing landscaping screens the roadside frontage of the cotton warehousing facility on Idaho Avenue roughly ¼ mile to the east of the proposed HEP site, and a row of recently planted landscape trees lines the east side of 11th Avenue for a distance of roughly 2,000 feet north of Jackson Avenue (roughly 1 mile southeast of the powerplant site). Portions of the project viewshed adjacent to or outside of the industrial park to the east, west and south are of moderate visual quality, characterized by a farmland landscape of moderately high scenic intactness. Urbanized portions of the City of Hanford north of the industrial park are of moderate visual quality typical of suburban residential areas.

The existing GWF power plant produces minimal visible exhaust stack vapor plumes and occasional visible cooling tower vapor plumes under cold and cool wet weather conditions. The physical and operational characteristics of the existing cooling towers are very similar to those of the proposed HEP project. Consequently, existing plumes at the GWF site are of similar frequency and similar but slightly smaller magnitude (approximately 85% size) to those predicted for the proposed HEP plant, as described in detail later in this analysis (Walters, 2001a).

Sensitive Receptors. Within 1 mile of the site, potentially sensitive visual receptors include scattered rural residences along 10th and 11th Avenues, and commuters and other motorists who travel along these two arterial roadways leading to downtown Hanford. Due to the long-term nature of visual exposure that would be experienced from people's homes, and the sensitivity with which people regard their places of residence, residential viewers are considered to have high visual sensitivity. A large concentration of residential viewers is located in a suburban neighborhood along 11th Avenue north of Houston Avenue, at distances of 2 to 3 miles from the HEP project site. Commuters, though relatively numerous, would experience fleeting, short-term views and their sensitivity is considered to be moderate.¹ East-west streets in the vicinity, including Iona, Idaho, and Jackson Avenues, are primarily used as access for workers en route to the various industrial facilities in the industrial park and are not considered to be visually sensitive.

Visual Exposure. The proposed HEP site is situated approximately ½ mile from 10th and 11th Avenues respectively. On-site reconnaissance confirmed that the facility would be visually screened from viewers along much of these roadways within foreground (up to roughly ½ mile) and middle-ground (1/2 to 3 miles) viewing distances by other nearby existing industrial development. These include the existing GWF Hanford cogeneration plant which directly abuts the site, the Pirelli-Armstrong tire factory immediately to the south across Idaho Avenue, the IRC grain processing facility also across Idaho Avenue to the southeast, the Del Monte tomato processing plant over ½ mile to the south, the Verdugal Brothers fertilizer plant and an aggregate plant located approximately ¼ mile to the north, and a large cotton warehousing facility roughly ¼ mile to the east. For a distance of approximately 1/2 mile southbound on 11th Avenue, north of Idaho Avenue, the site would be visible to motorists in open foreground views, though much of the proposed facility would be obscured by the existing GWF plant from these viewing locations. While the viewshed (area from which the project would be visible) of the HEP plant itself would thus be very limited, the overall project viewshed is potentially larger, a function of the height of visible plant-created water vapor plumes.

¹ Existing Average Daily Traffic on 11th Avenue is calculated to be 3,500 trips between Idaho and Iona Avenues nearest the project site, where open views to the site exist. ADT on 10th Avenue between Idaho and Iona Avenues, where views of the site are highly filtered by intervening structures, is 1,700 trips (SPPE, Figure 8.10-3. Annual Average Daily Traffic Volumes on State Routes and Local Roadways in the General Vicinity of the GWF Hanford Energy Park).

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS – Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?		X		
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		X		

DISCUSSION OF IMPACTS

The impact assessment methodology and significance criteria utilized in this study are described in detail in Appendix A-1.²

A. NO IMPACT

No scenic vistas of high visual quality were identified within the viewshed (area of potential visual effect) during site reconnaissance of the proposed HEP project, nor are any such vistas identified in adopted public policy documents. The project would thus not have a substantial adverse effect on a scenic vista.

B. NO IMPACT

As indicated in the discussion of LORS, above, there are no State or local scenic highways within the project viewshed, so item (b) would not apply to the HEP project.

C. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

The HEP project has the potential to degrade the existing visual character and quality of portions of the affected viewshed as described in detail under Section C, below. These anticipated effects include: introduction of an unsightly new switchyard in a prominent location at the intersection of 11th Avenue and Jackson Avenue; removal of approximately 2,000 linear feet of ornamental trees in the vicinity of the Del Monte Plant on 11th Avenue due to transmission line construction; temporary visual disturbances due to gas pipeline construction on 11th Avenue;

² Visual Assessment Methodology, Appendix A-1.

visual effects from occasional visible cooling tower vapor plumes; and visual effects of new project night lighting. As discussed individually, below, these effects would be less than significant with recommended mitigation measures as described under the Conditions of Certification, below.

POWER PLANT AND ON-SITE FACILITIES

The HEP would include an 80-foot HRSG exhaust stack, a 40-foot tall exhaust stack from the auxiliary boiler, and three 35-foot tall cooling tower cell exhausts. In addition, the HRSG and combination turbine inlet air structure would each be approximately 50 feet tall. As depicted in Figure 2b, Photosimulation of Proposed HEP Site After Construction, these structures would be of similar maximum height, somewhat greater overall horizontal extent, and somewhat smaller bulk and mass than the adjacent existing GWF plant. They are also of comparable height and of smaller bulk than other nearby existing industrial facilities such as the Pirelli-Armstrong tire factory and IRC grain processing facility across Idaho Avenue within the visual foreground of the site.

The applicant has provided photographs of the facility as seen from key sensitive viewing points, and has also provided computer simulations of the proposed project as seen from these viewpoints (Figures 2a,b through 8a,b). These exhibits, as confirmed by on-site reconnaissance by staff, make clear the on-site HEP facility power plant would be visible to a very limited degree from sensitive viewpoints as defined above. Potential visual impacts due to the on-site HEP power plant would thus be minimal. The plant would be largely screened to sensitive viewers by intervening industrial facilities, and where visible to sensitive viewers, would present a subordinate level of contrast in the context of an already developed industrial setting of low visual quality. The plant would present co-dominant levels of contrast to viewers adjacent to the proposed site on Idaho Avenue, but these viewers are regarded as having very low visual sensitivity due to their work-oriented activities. No significant impacts from the HEP on-site facility per se are anticipated.

VISIBLE WATER VAPOR PLUMES: HRSG PLUMES

HRSG Exhaust Stack Plumes. An independent psychrometric analysis and dispersion modeling analysis of the HEP project was conducted by staff, using the Combustion Stack Visible Plume (CSVP) model to predict potential visible plumes from the project HRSG stacks (Walters, 2001). The results of this analysis are presented in Tables 1 and 2. These values include all visible plumes (i.e., plumes of all size and visibility classes).

Table 1. Predicted Hours with HRSG Steam Plumes*

All Hours Plume Prediction				
Month	Plumes: Total Hours	Percent**	Plumes: No Fog No Rain Total Hours	Percent**
Spring	44	1.99%	32	1.51%
Summer	0	0.00%	0	0.00%
Fall	395	18.1%	156	8.42%
Winter	715	33.1%	123	9.35%
Total	1154	13.2%	311	4.15%

DAYLIGHT PLUME PREDICTION			
Plumes: Total Hours	Percent**	Plumes: No Fog No Rain Daytime Hours	Percent**
16	1.37%	12	1.03%
0	0.00%	0	0.00%
94	11.3%	34	4.40%
221	27.7%	31	5.10%
331	8.31%	77	2.04%

* Hours include visible HRSG plumes in all size classes

**The percentages shown in this table represent the percentage of the quantity listed (i.e. the seasonal no fog daylight frequency percentage is based on the number of daylight no fog hours in that three-month seasonal period).

The CSVP predicted plume size characteristics during the winter daylight no fog/no rain hours are as follows:

**Table 2. Predicted HRSG Steam Plume Dimensions
Winter Daylight No Fog/No Rain Hours**

	Length	Height	Width
Average	240 meters (788 ft.)	327 meters (1074 ft.)	31 meters (102 ft.)
Maximum	384 meters (1260 ft.)	548 meters (1800 ft.)	48 meters (158 ft.)

This analysis indicated that potential plumes from the HRSG stacks under non-fog, non-rain daylight conditions would mainly occur during cold or cool wet weather conditions in fall and winter months. As Table 1 shows, visible HRSG plumes are predicted to occur for 4.4% of non-fog, non-rain daylight hours (34 total hours) in fall, and 5.1% of non-fog, non-rain daylight hours (31 total hours) in winter. Further analysis of the data indicated that most of the daylight plume formation would occur during the early morning hours.

Although an undetermined proportion of HRSG plumes could achieve visually dominant proportions within foreground distances of the proposed plant, as indicated by the maximum predicted dimensions shown in Table 2, these would occur for a small total number of hours, falling far below the threshold of significance for reasonable worst-case visible plumes (10% of critical period) as described in Appendix A-1. Table 1 indicates that *total* visible HRSG plumes of all sizes would occur 5.1% of the winter critical period; *visually dominant plumes* would represent a proportion of these. Impacts from predicted HRSG plumes are thus anticipated to be less than significant.

LINEAR FACILITIES

Proposed Switchyard. A switchyard site is proposed at the corner of 11th Avenue and Jackson Avenue. Despite its proximity to the Del Monte plant this facility would occupy the immediate visual foreground of relatively large numbers of motorists traveling to and from downtown Hanford on 11th Avenue, in a scenic context defined predominantly by relatively intact agricultural landscape on three sides. The visually chaotic, utilitarian character of this feature and its strong visual dominance in immediate proximity to moderately high numbers of sensitive viewers would be a potentially significant visual impact. With recommended landscape screening as described below (Mitigation Condition of Exemption AES-1), this potential impact would be reduced to less-than-significant levels.

Proposed Transmission Line Route. A transmission line route has been proposed along the eastern edge of 11th Avenue between Idaho Avenue and Jackson Avenue. The proposed 115 kV 50-foot to 70-foot tall wood, 3-conductor transmission poles and associated lines would comprise a visually co-dominant feature in the foreground of views along 11th Avenue, adding incrementally to the visual intrusion of existing power poles on 11th Avenue, and further lowering the quality of views in the direction of the Kings Industrial Park, primarily as seen by motorists from 11th Avenue. These views of the industrial area are already of low scenic quality, and potential impacts from visual intrusion of new poles are thus considered less than significant.

Construction of this line would likely result in the removal of approximately 2,000 linear feet of recently planted landscape trees located north of Jackson Avenue west of the Del Monte plant. These trees are evidently recently planted and are currently inconspicuous, of 5-foot height or less. Their removal would not result in an immediate adverse visual effect. However, the existing trees would be expected to mature within 5 to 10 years into a substantial, visually enhancing feature in the near future. This loss of landscaping is a potentially significant visual impact. With the recommended mitigation measure of replacement planting as described below, (Condition of Exemption AES-2), this impact would be less than significant.

Alternate Double "Loop" Transmission Line. An alternate transmission interconnection has also been proposed, following the same route as that described above under the proposed transmission route, but requiring 60-foot to 80-foot tall, six-conductor steel poles rather than the 50-foot to 70-foot tall wood poles described above. Anticipated impacts of this alternative would be essentially similar to those

described for the preferred configuration, above, representing a visually co-dominant feature in a setting of low existing visual quality. This effect, though somewhat adverse, is considered a less than significant impact. Potentially significant impacts to existing trees north of Jackson Avenue on the east side of 11th Avenue would be the same as described for the preferred configuration and would represent a less than significant impact with recommended mitigation (Condition of Exemption AES-2).

Under this alternate double “loop” configuration, no switchyard would be required at Jackson and 11th Avenues, thus avoiding the adverse impact anticipated as a result of that feature under the preferred transmission line configuration.

Gas Pipeline Construction. A gas pipeline would be constructed along 11th Avenue between Hanford-Armona Road, approximately 3 miles north of the site, to the HEP site. Trenching and other construction activities, including staging and material storage, would create a visually disruptive condition for the duration of the construction activities. Due to their temporary short-term nature, these impacts would be less-than-significant with the recommended mitigation measures described below (Condition of Exemption AES-3).

VISIBLE WATER VAPOR PLUMES: MITIGATED COOLING TOWER PLUMES

Computer modeling of potential project-created vapor plumes was conducted for *mitigated* facility cooling towers using the SACTI model. The analysis assumes plume abatement mitigation measures that have been proposed by the Applicant (and incorporated as Condition of Exemption AES-4), and supersedes previous SACTI modeling performed for a non-plume-abated project scenario (Dunn, 2000). The results of the analysis of the current plume-abated project are provided in Table 3, below. It should be noted that these modeling results are considered somewhat larger or more frequent than actually anticipated, due to the SACTI model's tendency to overestimate the size of plumes in plume-abated systems. The SACTI model has not been specifically designed to model plume abated cooling towers (Walters, 2000b). The analysis does not identify plumes occurring specifically during daytime no-fog hours, but rather identifies plumes occurring during all no fog and no rain conditions, both day and night. For purposes of this analysis, therefore, the 'critical period' for evaluating plume effects was total seasonal no fog, no rain hours.

Due to the periodic, highly variable, and transitory character of visible plume impacts, the dimension of time must be factored into the evaluation of impact significance, in terms of duration and frequency of plume occurrence. These issues, including impact significance criteria, are discussed further in Appendix A-1, and paraphrased in the discussion that follows.

The SACTI cooling tower modeling reflects powerplant physical characteristics and anticipated cooling tower exhaust characteristics in combination with historic local meteorological data to predict the occurrence and magnitude of potential visible plumes.

Table 3. SACTI Cooling Tower Plume Analysis

		CEC Analysis – All No Fog/No Rain Hours ¹	
		Annual	Winter ³
Length (meters/ (feet))	50%	< 30 m (98.5 ft.)	< 40 m (131 ft.)
	10%	< 50 m (164 ft.)	< 300 m (985 ft.)
Height (meters/ (feet))	50%	< 30 m (98.5 ft.)	< 30 m (98.5 ft.)
	10%	< 30 m (98.5 ft.)	< 90 m (296 ft.)
Width (meters/ (feet))	50%	<20 m (66 ft.)	< 40 m (131 ft.)
	10%	<30 m (98.5 ft.)	< 50 m (164 ft.)

¹ - The data provided above includes the recognition and elimination of plume data that occurs during hours with fog or rain.

² - The 50% frequency value is the median value.

³ - Winter is the worst-case season for cooling tower plume dimensions.

As shown in Table 3, for approximately 50% of the time during winter no fog, no rain hours, plumes of up to 98.5 feet in height and 131 feet in length or less are anticipated. Such plumes, representing the typical (median) condition, would be visible to motorists on 10th and 11th Avenues, characterized as moderately sensitive, at foreground distances (up to roughly ½ mile) and would be visually subordinate, a less than significant impact. At greater distances such typical plumes would be even less evident and would represent a less than significant impact.

Under a reasonable worst-case scenario of 10% of no fog, no rain winter hours, a plume of up to approximately 296 feet in height and 985 feet in length is predicted. Motorists would experience such plumes as a visually dominant feature of views for extended periods as they travel to and from the City of Hanford within a foreground radius of roughly 1/2 mile, and as a co-dominant to subordinate feature at distances greater than this. As described in the Setting discussion above, these viewers would be expected to have moderate visual sensitivity. From viewing locations within the foreground radius of ½ mile, these views would be seen in the context of the low existing visual quality of Kings Industrial Park. From viewing locations in the surrounding agricultural areas at middleground distances of ½ to 3 miles, views would be seen in the context of a landscape of moderate visual quality. Under the criteria for evaluating plume impacts applied in this study (see Appendix A-1), these impacts, from both foreground and middleground viewpoints, would be less than significant, with proposed plume abatement measures as described under Condition of Certification AES-4. As stated previously these SACTI predictions are assumed to be somewhat greater than actual plumes that would occur under a plume-abated condition, as proposed.

For other viewers at foreground distances, including residents of one home near the intersection of 12th Avenue and Idaho Avenue at a distance of approximately ½ mile, the predicted reasonable worst-case (seasonal 10%) plumes would be visually dominant, and generally occur simultaneously with existing visually dominant plumes of the GWF plant. Residents are generally regarded as having high visual sensitivity. This impact, though potentially significant, is considered adverse but less than significant because sensitive viewpoints where reasonable worst-case plume effects are expected to exceed the criteria of Appendix A-1 are limited to a single household in an existing visual setting that is currently highly industrial and of poor visual quality. For that household, the overall industrial landscape character would not conspicuously change from existing conditions due to the predicted plume.

For roughly 20 to 40 residents at near-middleground distances (up to roughly 1-1/2 mile), reasonable worst-case plumes would be visually subordinate in the context of a moderate quality agricultural landscape at distances of over 1 mile from the project; and co-dominant to subordinate at distances of ½ to 1 mile in the context of the low quality landscape of the industrial park. These impacts would be adverse, but less than significant with proposed plume abatement mitigation as described in Condition of Certification AES-4, below. For the large numbers of residents in the suburban neighborhood located north of Houston Avenue, at distances of two to three miles from the project site, these 10%-frequency plumes, with proposed plume abatement, would appear subordinate to inevident, a less than significant impact.

D. LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

Substantial new plant lighting, if not adequately mitigated, has the potential to have adverse effects on the nighttime visual environment of the vicinity, due to direct illumination or glare on off-site viewers; or to nighttime light pollution (i.e., 'backscatter' or reflected light visible in the night sky under certain conditions). The applicant has committed to shielded, directed night lighting designed to prevent light backscatter and glare by restricting direct light downward and within the project boundaries. With this and related measures detailed in Condition of Exemption AES-5, no significant nighttime glare impacts are anticipated. No other new sources of glare are anticipated as a result of the proposed project.

CUMULATIVE IMPACTS

No significant cumulative visual impacts due to the project are anticipated. The proposed plant, in combination with existing and foreseeable future development in the vicinity would not substantially alter the existing landscape character of the plant's visual setting. Predicted cooling tower plumes of the proposed HEP project would occur simultaneously with existing cooling tower plumes of the adjacent GWF power plant under occasional climatic conditions conducive to plume formation. The overall frequency of visually dominant plumes seen within the viewshed is not expected to increase from existing conditions, nor is the number of viewers exposed to occasional visually dominant plumes expected to increase. Thus, the overall landscape character of the affected environment is expected to remain essentially as it is. No other substantial visible vapor plumes in the vicinity were identified which would contribute to potential cumulative effects.

CONCLUSIONS

The proposed HEP power plant and appurtenant facilities, including new plant night lighting, are not expected to have significant adverse visual impacts with the recommended Conditions of Exemption described below. Computer analyses of water vapor plumes from mitigated cooling towers and HRSG exhaust stacks indicate these would also represent less than significant visual impacts.

PROPOSED CONDITIONS OF EXEMPTION

AES-1 Proposed Switchyard Screening. The proposed switchyard shall be screened by a hedge of trees and other tall vegetation of sufficient height and density to substantially screen the facility to viewers on 11th Avenue. The screening shall, at a minimum, surround the site on the north, south, and west sides and be designed to attain a height of 15 feet within 5 years. Suitable irrigation shall be installed to ensure survival and desired rate of growth. The landscape screening and irrigation system shall be monitored for a period of 3 years to ensure survival. During this period all dead plant material shall be replaced.

Protocol: The project owner shall submit a plan for the landscape screening and three-year mitigation monitoring program to the Compliance Project Manager (CPM) for review and approval.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

The project owner shall notify the CPM within one week after the landscape screening and irrigation system have been installed and are ready for inspection.

Verification: At least 90 days prior to installing the landscape screening, the project owner shall submit the plan to the CPM for review and approval. If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven days after completing installation of the landscape screening that the planting and irrigation system are ready for inspection.

AES-2 Proposed Transmission Line Route Tree Replacement. Trees removed as a result of transmission line construction shall be replaced on a one-to-one in-kind basis. Replacement planting shall be monitored for a period of 3

years to ensure 100% survival. During this period all dead plant material shall be replaced. If feasible, this planting shall be located between the project right-of-way and the shoulder of 11th Avenue.

Protocol: The project owner shall submit a plan for the landscape screening and three-year mitigation monitoring program to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

The project owner shall notify the CPM within one week after the landscape screening has been installed and is ready for inspection.

Verification: At least 90 days prior to installing the landscape screening, the project owner shall submit the plan to the CPM for review and approval. If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven days after completing installation of the landscape screening that the planting is ready for inspection.

AES-3 Pipeline Construction. The project owner shall require the following as a condition of contract with its contractors to construct the proposed gas pipeline:

Construction shall be completed within 12 months. Staging, material and equipment storage areas, if visible from major arterial roads, shall be visually screened. All evidence of construction activities, including ground disturbance due to staging and storage areas located in the visual foreground of 11th Avenue or other major arterial roads shall be removed and remediated upon completion of construction. Any landscaping or vegetation removed in the course of construction will be replaced on a 1-to-1 in-kind basis. Such replacement planting will be monitored for a period of 3 years to ensure survival. During this period all dead plant material shall be replaced.

Protocol: The project owner shall submit a plan for restoring the surface conditions of any rights-of-way disturbed during construction of underground utilities. The plan shall include grading to the original grade and contour and revegetation of the rights-of-way.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until receiving written approval of the submittal from the CPM.

The project owner shall notify the CPM within one week after the grading and revegetation has been installed and is ready for inspection.

Verification: At least 90 days prior to beginning implementation of the surface restoration, the project owner shall submit the plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven days after completing the surface restoration that it is ready for inspection.

AES-4 Cooling Tower Vapor Plume Abatement. The project owner shall implement cooling tower design and operation measures to ensure that visible vapor plume formation does not exceed the size and frequency predicted in the SACTI modeling performed for this study. These measures may include entrainment of a 50% additional proportion of air above normal operating requirements, changing of the axis of cooling tower orientation from north-south to east-west, or other measures as determined by final cooling tower design, so long as final plume modeling demonstrates plume size and frequency to be equal to or less than those predicted in the SACTI modeling performed for this study.

Protocol: The project owner shall submit final design plans and visible plume modeling and supporting data needed for an independent staff analysis of the cooling towers to the CPM for confirmation that the cooling towers meet the level of visible plume abatement performance predicted in this study.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: At least 90 days prior to start of construction of the cooling towers, or a lesser period as mutually agreed upon by the project owner and CPM, the project

owner shall submit to the CPM for review and approval, final cooling tower design plans, visible plume modeling and supporting data for the cooling towers as proposed in the final design plan, to confirm compliance with the intended level of plume abatement as described in the plume predictions of this study. Visible plume modeling shall utilize SACTI, or another model agreed upon in writing by the CPM. If necessary, the CPM shall require plan revisions if independent staff review of these data indicate non-conformance with the level of plume abatement assumed in the SACTI modeling performed for this study.

AES-5 Night Lighting. The project owner shall design and install all new project lighting to minimize potential night lighting impacts, as follows:

- a. All new night lighting shall be of minimum necessary brightness consistent with operational safety.
- b. All new lighting shall be shielded and directed downward to prevent all uplighting and all direct light trespass (direct lighting extending outside the boundaries of the facility).
- c. Wherever feasible and safe, lighting shall be kept off when not in use.
- d. A lighting complaint resolution form (following the general format of that in Appendix A-2) shall be maintained by plant operations, to record all lighting complaints received and to document the resolution of that complaint.

Protocol: The project owner shall develop a lighting plan for the project incorporating the above measures and submit it to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the plan, the project owner shall prepare and submit to the CPM a revised plan.

Lighting shall not be installed before the plan is approved. The project owner shall notify the CPM when the lighting has been installed and is ready for inspection

Verification: At least 60 days before ordering the exterior lighting, the project owner shall provide the lighting plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 days of receiving that notification the project owner shall submit to the CPM a revised plan.

The project owner shall notify the CPM within seven days of completing exterior lighting installation that the lighting is ready for inspection.

REFERENCES

Dunn, William, 2000. Summary of Predicted Plume Dimensions (Table 20 Revised), September 28, 2000.

Walters, W., 2000a. Air Quality Engineer, Aspen Environmental Group, Memorandum dated November 30, 2000, Hanford Cooling Tower Comparison.

Walters, W., 2000b, Air Quality Engineer, Aspen Environmental Group, Memorandum dated December 13, 2000, Hanford Cooling Tower SACTI Modeling Analysis.

Walters, W., 2001. Air Quality Engineer, Aspen Environmental Group, Memorandum dated January 23, 2001, Hanford HRSG Steam Plume Assessment.

APPENDIX A-1: VISUAL ASSESSMENT METHODOLOGY

The following discussion describes the evaluation methodology employed in conducting the visual resource inventory of the project setting. Visual impact assessment methods are described in detail in Impacts, below.

The analytical methodologies employed are described in greater detail in subsequent sections, below, and reflect accepted professional practice derived primarily from the Bureau of Land Management (BLM) VRM Contrast Rating method (U.S. Dept. of Interior, 1986) and the U.S Forest Service VMS method (U.S. Dept. of Interior, 1974). The basic principles and structure of these methodologies have been utilized and adapted to the present project circumstances.

In the level terrain and relatively open landscape setting of the HEP, the broad viewshed or area of potential visual effect (sphere of influence) was defined primarily by distance. Within a foreground radius of roughly ½ mile, HEP project features have the potential to appear visually dominant. At distances of roughly ½ mile to 1 mile, those features would appear visually co-dominant to subordinate where they are open to view. Beyond distances of 1 mile project features would be little noticed, but project-created vapor plumes could be visible to varying degrees of dominance as described in greater detail in the analysis. Within this overall viewshed, the existing landscape includes two broadly consistent areas of visual character, or landscape units: the Kings Industrial Park, and surrounding agricultural/rural residential areas.

Typical visual character, quality, and viewer sensitivity have been ascribed to each of the broad landscape types of the project viewshed, and are the basis for evaluations of potential project impacts.

Visual character, a descriptive term, refers to the formal visual attributes typical of a setting and is often closely tied to an area's land use as well as its physiography. A landscape's visual character underlies its perceived quality and value, and also forms the basis for a project's level of contrast or conspicuousness in the impact assessment phase. Visual quality, an evaluative term, reflects a judgment of a landscape's attractiveness as determined by such characteristics as visual distinctiveness, coherence, intactness, variety and interest, and the presence of features, such as vegetation and water, known to be preferred by the majority of viewers. *Visual quality* of a landscape setting, in combination with the visual sensitivity of viewers within it, determines the level of acceptable project contrast in the determination of impact significance. *Visual sensitivity* is a judgment of anticipated viewer concern and response to proposed visual changes, based on factors such as typical viewer activity and corresponding level of scenic expectations, number of viewers exposed to the project, extent, duration and character of such views, known local and historic values, and explicit expressions of public policy relating to the visual resource or urban design. In this study residential land uses were assumed to have high visual sensitivity; motorists on major roadways were assumed to have moderate sensitivity.

Key Observer Points (KOPs) were identified to represent sensitive viewer groups and viewing locations. The most sensitive of these have been used as viewpoints for computer-generated simulations of the proposed project and for evaluation of project contrast in impact evaluation, described further under **Impacts**, below.

IMPACT ASSESSMENT METHODOLOGY

In a manner similar to the BLM VRM method and Forest Service VMS method, impacts in this study were characterized in terms of their contrast with the existing setting. This contrast is expressed as the level of perceived visual modification, dominance and tendency to attract attention attributable to project-caused changes. In both the cited methods, this characterization of objective visual change is stated in terms of how likely the visual contrast of the project is to be noticed by casual observers. This tendency to capture viewers' attention is referred in this study as visual dominance and classified as follows:

LEVELS OF VISUAL CONTRAST OR DOMINANCE

Inevident: Change not noticed by casual observers

Subordinate/Weak: Change noticed but attracts less attention than other existing features in the landscape

Co-Dominant/Moderate: Change noticed and attracts attention to a similar degree as dominant features of the existing landscape setting

Dominant/Strong: Change noticed and visually dominates the setting, i.e., attracts attention of viewers more strongly than other features in the existing setting.

In all cases these levels of *visual dominance* or modification are understood to be a corollary of the level of contrast created by the introduced project features. Contrast is generally evaluated in terms of apparent visual scale, as well as contrast in formal visual attributes such as form and color, and ultimately expresses contrast with existing visual character, which is the product of those attributes.

Visual contrast/dominance are affected by viewing distance, specific conditions of project viewing and project exposure, and other factors. These are reflected in the ratings developed for each particular representative KOP.

Contrast/dominance ratings were conducted with the assistance of visual simulations submitted by the applicant and validated in the field.

IMPACT SIGNIFICANCE CRITERIA

Contrast per se is not equivalent to impact. The degrees of contrast or dominance described above represent acceptable levels of visual change, as determined by the *visual quality* of a viewer's setting, and that viewer's *visual sensitivity*, as follows:

Aesthetics Appendix Table 1: Acceptable Levels of Visual Dominance

	High Sensitivity	Moderate Sensitivity	Low Sensitivity
High Quality	Subordinate	Subordinate	Co-Dominant
Moderate Quality	Subordinate	Co-dominant	Dominant
Low Quality	Co-dominant	Dominant	Dominant

In keeping with usage of the U.S. Bureau of Land Management and U.S. Forest Service, this table does not apply the threshold of 'inevident,' which is reserved for special designation areas of unique scenic value, such as national parks, legislated scenic areas, etc.

Visual changes that exceed these guidelines *may* represent potentially significant impacts. For example, a visually subordinate change to a high quality, high sensitivity view may be an acceptable level of change. A visually co-dominant change may represent a significant impact to the same viewpoint (depending upon other viewing factors described directly below).

In addition to these criteria of visual dominance, a variety of other factors may influence evaluations of visual impact. These include such factors as viewing conditions, numbers of affected receptors, special local or cultural values, and factors affecting visual exposure. In the present case the latter is of special relevance.

Power plants typically have the potential to generate visible vapor plumes of varying magnitude; impacts may fluctuate between highly dominant to nonexistent for varying periods of time and under various viewing conditions. This transient and changeable character necessitates the consideration of time in the evaluation of their potential impact.

This study adopted the following criteria for evaluating plume impact significance for the purposes of evaluating this project. Plumes were considered to represent a potentially significant impact if they were anticipated to exceed 'normal' acceptable levels of visual change (as determined by the visual quality and sensitivity of a KOP under **Aesthetics Appendix Table 1**, above) in excess of 50 percent of critical viewing periods, as defined below (the '*typical*' plume condition); **or** to be *dominant* in conditions of *high or moderate quality and sensitivity for 10 percent or more of critical periods* (the '*reasonable worst-case*' plume condition). For example, a viewpoint of moderate visual quality and high sensitivity could experience significant impacts if subordinate levels of contrast from plumes were exceeded for 50 percent or more of critical periods, consistent with **Aesthetics Appendix Table 1**, but would not if such contrast occurred less than 50 percent of critical periods, *unless* dominant levels of contrast occurred more than 10 percent of the critical period. The 'critical viewing period' was defined as daylight hours, without fog or rain, per season. The *seasonal* criterion reflects the tendency of visible plumes to be concentrated in certain seasonal periods and not in others. The '*no fog*' criterion simply reflects the fact that plumes may often form in conditions that are also

conducive to fog formation, but they are not likely to be highly visible or perceived as substantially adverse under such conditions. The threshold of 10% of these critical periods has been applied in the evaluation of plume impacts of other, similar power projects, and is similar, e.g., to the 'L₁₀' criterion frequently applied in statistical noise analyses to capture the potential impact of severe but transient, short-duration impacts. Evaluating potential impact based on *maximum* plume sizes would also be misleading, since extremely large plumes may occur for very short periods of time but would be so unusual and transitory that they are not considered a reasonable basis for judging impacts. 10% of the critical period was considered to be sufficiently frequent to be representative of a 'reasonable worst case.' Nighttime plumes would only have the potential to cause impacts if they were to be illuminated by bright night lighting.

OTHER IMPACT SIGNIFICANCE CRITERIA

The CEQA Guidelines define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including...objects of historic or aesthetic significance". (Cal. Code Regs., tit.14, § 15382.) Specifically, Appendix G of the CEQA Guidelines identifies as significant, project effects which will "(H)ave a substantial, demonstrable negative aesthetic effect ..."

Under the CEQA Guidelines, significant visual impacts may result from:

- a. A substantial adverse effect on a scenic vista
- b. Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
- c. Substantially degrade the existing visual character or quality of the site and its surroundings
- d. A new source of substantial light or glare which would adversely affect day or nighttime views in the area

Finally, visual impacts are considered potentially significant if they conflict with published public policies or goals.

APPENDIX A-2

LIGHTING COMPLAINT RESOLUTION FORM

Hanford Energy Park Kings County, California
Complainant's name and address:
Phone number:
Date complaint received: Time complaint received:
Nature of lighting complaint:
Definition of problem after investigation by plant personnel:
Date complainant first contacted:
Description of corrective measures taken:
Complainant's signature: _____ Date: _____
Approximate installed cost of corrective measures: \$ _____
Date installation completed: Date first letter sent to complainant: _____ (copy attached) Date final letter sent to complainant: _____ (copy attached)
This information is certified to be correct:
Plant Manager's Signature: _____

(Attach additional pages and supporting documentation, as required.)

AGRICULTURE RESOURCES

Testimony of Patrick Angell

INTRODUCTION

The agriculture resources section discusses potential impacts of the proposed Hanford Energy Park (HEP) regarding agricultural lands. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts to agricultural land resources during project construction, operation and closure. Energy Commission staff designated all of the CEQA checklist items for agricultural resources as "less than significant impact". A brief overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to agricultural resources. The section concludes with the staff's determination that conditions of exemption are not required.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

STATE

CALIFORNIA LAND CONSERVATION ACT OF 1965

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. The landowner commits the parcel to an annually renewing ten-year period wherein no conversion out of agricultural use is permitted. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. Participation in the Williamson Act program is dependent on county adoption and implementation of the program, and is voluntary for landowners.

The Farmland Security Zone is additional agricultural land conservation legislation that went into effect August 24, 1998. This program allows local governments and landowners to rescind a Williamson Act contract and simultaneously place the farmland under a Farmland Security Zone contract, which has an initial term of at least 20 years. A Farmland Security Zone contract offers landowners greater property tax reduction than the Williamson Act by valuing enrolled real property at 65 percent of its Williamson Act valuation, or 65 percent of its Proposition 13 valuation, whichever is lower.

FARMLAND MAPPING AND MONITORING PROGRAM

The California Department of Conservation established the Farmland Mapping and Monitoring Program (FMMP) in 1982 in response to a critical need for assessing the location and quantity of agricultural lands and conversion of these lands to other uses. It is the only statewide land use inventory conducted on a regular basis that identifies the conversion of agricultural land to urban and other uses. Every even numbered year FMMP issues a Farmland Conversion Report. FMMP data is used

in elements of some county and city general plans, in environmental documents as a way of assessing project impacts on Prime Farmland and in regional studies on agricultural land conversion, and in assessing impacts of proposed projects reviewed through the process.

LOCAL

KINGS COUNTY GENERAL PLAN—OPEN SPACE ELEMENT

Goal 22: Preserve agricultural land as open space.

Objective 22.1: Protect agricultural land as an important component of the Kings County economy.

Policy 22a: Pursuant to the Land Use Element, preserve agricultural land in open and economically sized parcels for farming or widely dispersed agricultural processing facilities unless specifically designated for other uses.

Policy 22b: Maintain all agricultural land as open space when not necessary for other uses which promote the economy, public welfare, or quality of life for Kings County residents.

SETTING

The proposed project would construct an expansion to an existing electric and steam generating facility operated by the applicant in the Kings Industrial Park, located approximately three miles south of downtown Hanford, within the City limits. The project includes an expanded power plant to be constructed utilizing five acres adjacent to the existing facility on the north and east, accompanied by construction and operation of electrical transmission lines, an electrical switchyard, and a gas pipeline.

Kings Industrial Park consists of properties zoned for industrial use, served by roadways and other infrastructure generally appropriate for industrial uses. The ten-acre expansion area for the proposed power plant is currently vacant. Other properties within the Kings Industrial Park have either been developed with industrial uses, or are vacant. Other nearby industrial uses, located outside the Kings Industrial Park and within County jurisdiction, include the Pirelli tire manufacturing facility, directly south of the proposed project site on the south side of Idaho Avenue, and the Del Monte processing and warehousing facility, located south of the proposed project site on the north side of Houston Avenue.

Other industrial uses, agricultural uses, and rural residences characterize the general vicinity of the project site. Railroad right-of-way and tracks, owned and operated by the Burlington Northern Railroad, run in a north-south direction through the industrial park. The nearest residence is located approximately three-fourths of a mile from the applicant's existing facility.

The proposed transmission line is a single "loop" that is 1.36 miles long. The route would connect to a switchyard to be constructed as part of the proposed project,

occupying approximately a one-acre site. There is one alternate configuration, a double “loop”, both of which follow the same route. In the alternate configuration, no off-site switchyard would be required. Some areas now in agricultural production would be disturbed by construction of the transmission lines, and the proposed site for the electrical switchyard would occupy property not currently in agricultural production.

The proposed project includes construction of a 16-inch natural gas pipeline. The pipeline would be approximately 2.8 miles in length, and would connect with an existing Southern California Gas Company pipeline near the intersection of 11th Avenue and Hanford-Armona Road, north of the expanded facility. The portion of the pipeline located adjacent to 11th Avenue would be constructed in an existing right-of-way, and would disturb some areas now in agricultural production.

The U.S. Department of Agriculture, Soils Conservation Service, has identified farmlands as follows:

Prime Farmland: Land that has the best combination of physical and chemical properties for the production of crops.

Farmland of Statewide Importance: Similar to Prime Farmland, but with minor shortcomings (e.g., steeper slopes, inability to hold water).

Unique Farmland: Land of lesser quality soils, but recently used for the production of specific high economic value crops.

Urban and Built-Up Land: Land used for residential, industrial, commercial, construction, institutional, public administrative purposes, and other urban uses.

Farmland of Local Importance: Land of importance to the local agricultural economy as determined by the county board of supervisors and local advisory committees.

Other Land: Land not included in any of the above categories.

The proposed site for the expanded facility is classified as Farmland of Statewide Importance. Land is removed from this designation if it has not been cultivated in two mapping cycles, involving a period of approximately four years. Department aerial photographs indicate the site appeared to have been in agricultural production in 1995 and 1997. The field appeared dry, but maintained, in 1999 photos. If the site were to remain fallow in 2002 and 2004 photographs, it would be removed from the Farmland of Statewide Importance designation. (Withers, 13)

When removing land from this designation, the Department of Agriculture selects an appropriate alternative category for the site, which may include Urban or Other land. Land would be disturbed along the route of the proposed electrical transmission line. The soil type encountered would be Kimberlina fine sandy loam, and has been classified as either Urban and Built-Up Land, Farmland of Statewide Significance, or Unique Farmland. The proposed electrical transmission route would result in temporary disturbance, and minimal removal of land from agricultural production.

The alternative electrical switchyard identified in the SPPE Application is now the preferred switchyard, and is proposed to be located at the northeast corner of the intersection of the Jackson Avenue and 11Th. Avenue and would occupy a one-acre parcel, which is not currently in agricultural production.

The proposed pipeline, extended north from the HEP site, would encounter soils that are suitable for irrigated crops and urban development. The pipeline route would cross lands that are designated as Farmland of Statewide Importance, and lands under Williamson Act contracts.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AGRICULTURE RESOURCES -- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?			X	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?			X	
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?			X	

DISCUSSION OF IMPACTS

A. Less Than Significant Impact

The five acre site for the expanded facility is located in the Kings Industrial Park. The parcel affected has been identified as Farmland of Statewide Importance by the California Department of Conservation, Division of Land Resources Protection. The routes for the proposed electrical transmission lines and the gas pipeline route would affect some land that has been mapped as Prime Farmland, Farmland of Statewide Importance or Unique Farmland by the Department of Conservation. The proposed electrical transmission route does not affect lands currently in agricultural production. The alternative electrical transmission route follows the proposed transmission line route and does not affect lands currently in agricultural production.

The proposed site for the switchyard, at the northeast corner of the intersection of Jackson Avenue and 11Th Avenue does not effect lands currently in agricultural production. A parcel map, leaving the remainder of the 156-acre parcel intact would create the one-acre parcel that would be converted. Other parcels in the vicinity of the affected parcel are subject to Williamson Act contracts, and are 157 to 160 acres in size. The conversion of the one-acre parcel for switchyard purposes is not expected to result in any conversion of other parcels to non-agricultural uses, because no urban services would be extended by the project. In addition, extension of electrical transmission lines (proposed and alternative) would result in minor agricultural land loses and would not compromise the remaining areas.

The construction of the gas pipeline would cause temporary disruption to agricultural operations in the immediate vicinity. Because no aboveground facilities are associated with the pipeline, land disturbed could be returned to agricultural production once the pipeline was installed.

The impact of conversion of farmland to industrial uses, in connection with the initiation of such uses in the Kings Industrial Park, has been addressed in other environmental documents prepared by the City of Hanford.

The Kings Industrial Park was created through action by the City of Hanford and the Redevelopment Agency of the City of Hanford in 1974. The original boundaries of the Kings Industrial Park did not include the property now serving as the site for the existing GWF facility, nor the ten-acre area proposed for plant expansion in the current project. The Kings Industrial Park boundaries were expanded in 1983 to include an additional 366.64 acres, expanding the industrial park to Idaho Avenue, including the site now occupied by GWF, and the ten-acre proposed plant expansion area. The expansion area was annexed to the City of Hanford. The portion of the expansion area involved in this project, involving land west of the railroad to 11th Avenue, had previously been designated for industrial use in the City's General Plan.

The City of Hanford, acting as the lead agency, prepared an environmental impact report (EIR) in connection with the 1983 expansion of the industrial park (the 1983

EIR). The 1983 EIR discussed the impact of the permanent loss of agricultural production that would result from the expansion, concluding that it would constitute a significant irreversible change. The 1983 EIR noted that the expansion area was already impacted by a pattern of existing industrial use, which limited the opportunity for efficient agricultural management in the area. (1983 EIR, page VI-1.) The Redevelopment Agency, in connection with approval of the expansion, adopted a Statement of Overriding Considerations relating to the loss of the affected agricultural land (Resolution No. 83-4, Redevelopment Agency of the City of Hanford, November 1, 1983.).

The City's General Plan was amended in 1991, following litigation relating to the existing GWF facility. In accordance with the Court ruling, the City amended the Land Use, Water Conservation, and Circulation Elements of the General Plan, resulting in project consistency with the General Plan. The Supplemental EIR, prepared in connection with the General Plan amendments, identified the elimination of 3.5 acres of agricultural land to accommodate the GWF project as an irreversible environmental change, precluding return of the site to its previous natural state and agricultural use (Supplemental EIR, page 5-3). The EIR was certified by the City of Hanford Redevelopment Agency, which adopted a Statement of Overriding Considerations with regard to the potential loss of agricultural land.

The EIR prepared in connection with the City's update of its General Plan in 1994 identified the cumulative impact of conversion of farmland to urban uses as a significant and unavoidable impact. The 1994 General Plan update did not change the industrial designation for properties within the Kings Industrial Park, but did include re-designation of 5,702 acres of Prime Agriculture lands, and 3,339 acres of Farmland of Statewide Importance, to urban uses. The General Plan EIR noted that continuing development of the City, and implementation of the General Plan, would facilitate the continuing loss of agricultural land in Kings County, and that such conversion would be an unavoidable and significant impact (1994 General Plan Update EIR, page 2-5). The Hanford City Council certified the 1994 General Plan EIR, and adopted a Statement of Overriding Considerations with regard to the General Plan.

As with the original GWF project, the proposed expansion of the GWF facility would occur on land that has been identified as Farmland of Statewide Importance. Construction of the proposed facility would preclude future use of the site for agricultural purposes. As discussed in the Land Use section of this Initial Study, however, the City has designated portions of the community for industrial use for purposes which include encouraging urban uses to develop within identified areas, thus protecting the agricultural uses within the City's planning area.

While the proposed project would convert land that is designated as important farmlands to urban use, the acreage converted is within an area designated for industrial use in the General Plan and zoning ordinance, and no extension of City urban services would be required. The project would not, therefore, encourage additional urban development outside the boundaries of the industrial park. The impact of the conversion of the project with regard to conversion of agricultural land is considered less than significant.

The direct and cumulative impacts of the conversion of land within the Kings Industrial Park has been previously addressed in the EIR prepared in connection with the industrial park expansion in 1983, referenced above, and cumulative impacts of conversion of farmland in the vicinity of the project have been addressed in the 1994 General Plan Update EIR. To the extent the project would contribute to a cumulative impact, such impact has been previously addressed in environmental documents adopted by the City of Hanford and the City of Hanford Redevelopment Agency.

B. Less Than Significant Impact

The proposed plant expansion would occur within the Kings Industrial Park, on property zoned for industrial use. The proposed electrical transmission route would be located, in part, on land zoned for agricultural use (i.e., AG-20) within the unincorporated portion of Kings County. The provisions of the Kings County AG-20 zone district permit the construction and operation of electrical transmission structures as a permitted use, and no permit would be required.

Approximately one mile of the proposed natural gas pipeline would be installed on land that is subject to Williamson Act contracts.

Any such land disturbed by project construction would be returned to agricultural production following construction. No violation of the Williamson Act contract would result (Williams, 11).

The proposed project is consistent with the General Plan designation and established zoning for the areas affected by the proposed project, and would not require changes that would violate existing Williamson Act contracts. The project impact is less than significant.

C. Less Than Significant Impact

The five acre parcel proposed for plant expansion purposes is not in active agricultural production, but is identified as Farmland of Statewide Importance.

Potential impacts from the proposed project evaluated in this Initial Study include impacts on air quality, noise, and traffic and transportation. None of the impacts identified for these study areas would involve significant disruption of neighboring land uses such that nearby agricultural uses would be severely disrupted, or made untenable.

There are no agricultural uses within the industrial park, and any new industrial uses within the Kings Industrial Park would not involve conversion from agricultural uses.

The proposed project is consistent with the General Plan designation and established zoning for the areas affected by the proposed project, and would not involve the extension of urban services to new properties. The project would not involve other changes that could result in conversion of farmland to non-agricultural uses, and the impact is, therefore, less than significant.

CUMULATIVE IMPACTS

Staff concludes there are no cumulative impacts associated with this project

CONCLUSIONS

Based on the discussion above, impacts on agricultural resources are determined to be less than significant.

PROPOSED CONDITIONS OF EXEMPTION

None proposed.

REFERENCES

City of Hanford General Plan, 1994. City of Hanford. General Plan. May 1994.
Submitted to the California Energy Commission

City of Hanford Zoning Ordinance, Title 17, Chapter 17.02, 1994.

City of Hanford, Zoning Ordinance and Industrial Park Performance and
Development Standards, City of Hanford Municipal Code Amendment No.
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City of Hanford, Environmental Impact Report for the Kings Industrial Park, August
1974.

City of Hanford, Environmental Impact Report for the Redevelopment Plan for the
Expansion of the Kings Industrial Park, June 1983.

City of Hanford, Subsequent Environmental Impact Report, Hanford Cogeneration
Project, June 1991.

City of Hanford, Environmental Impact Report for the City of Hanford General Plan,
April 1994.

Kings County General Plan, updated 1998.

Kings County Zoning Ordinance, updated 2000.

Tim Niswander, Assistant Commissioner, Kings County Agricultural Commissioner's
Office; telephone conference; August 7, 2000.

Richard Withers, Research Analyst, California Department of Conservation;
telephone conference; August 8 and 9, 2000.

Rick Williams, Planner, Kings County; meeting; August 3, 2000.

AIR QUALITY

Testimony of Dr. Nasrin Behmanesh and William Walters

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the construction and operation of the proposed Hanford Energy Park (HEP) Project, which will be located adjacent to the existing GWF cogeneration power plant in Kings County.

In carrying out this analysis, the California Energy Commission staff evaluated the major issues identified in the CEQA's Air Quality Checklist. The following sections address the questions include in the Checklist.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

Under the Federal Clean Air Act (40 CFR 52.21), there are two major components of air pollution control requirements for stationary sources, New Source Review (NSR) and Prevention of Significant Deterioration (PSD). NSR is a regulatory process for evaluation of those pollutants that violate federal ambient air quality standards. Conversely, PSD is a regulatory process for evaluation of those pollutants that do not violate federal ambient air quality standards. The NSR analysis has been delegated by the environmental protection agency (EPA) to the San Joaquin Valley Air Pollution Control District (SJVAPCD). The EPA determines the conformance with the PSD regulations. The PSD requirements apply only to those projects (known as major sources) that exceed 250 tons per year for any pollutant, or any new facility or stationary source category that is listed in 40 CFR Part 52.21(b)(1)(i)(a), and that emits 100 tons or more, per year of any criteria pollutant. A major modification at an existing major source which results in an emission increase of 100 ton per year for carbon monoxide (CO), 40 tons per year for oxides of nitrogen (NO_x), sulfur dioxide (SO₂) or volatile organic compounds (VOC), or 15 tons per year for particulate matter less than ten microns in diameter (PM₁₀) will also be subject to PSD review. The existing GWF facility is not a major source and the HEP project does not itself exceed 100 tons per year of any pollutant. However, the combined facility will emit above 100 tons per year of CO, therefore any subsequent major modification will trigger PSD review.

STATE

The California State Health and Safety Code, Section 41700, requires that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

LOCAL

The proposed project is subject to the following San Joaquin Valley Air Pollution Control District (District)) Rules and Regulations:

RULE 2201 – NEW AND MODIFIED STATIONARY SOURCE REVIEW RULE

The main function of the District's New Source Review Rule are to allow for the issuance of Authorities to Construct, Permits to Operate, the application of Best Available Control Technology (BACT) to new or modified permit source and to require the new permit source to secure emission offsets.

SECTION 4.1 – BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology is defined as: a) has been contained in any State Implementation Plan and approved by EPA; b) the most stringent emission limitation or control technique that has been achieved in practice for a class of source; or c) any other limitation or control technique which the District's Air Pollution Control Officer (APCO) finds is technologically feasible and is cost effective. BACT is required for NO_x, VOC, PM₁₀ and SO₂ emissions from any new or modified emission unit that exceed 2 lb/day, and CO emissions that exceed 550 lb/day. In the case of HEP, BACT will apply for NO_x, VOC, CO, SO₂, and PM₁₀ from all point sources of project.

SECTION 4.2 – OFFSETS

Emissions offsets for new or modified sources are required when those sources exceed the following emission levels:

- Oxides of Nitrogen, NO_x – 10 tons/year
- Volatile Organic Compounds, VOC - 10 tons/year
- Carbon Monoxide, CO – 550 lbs/day
- PM₁₀ – 80 lbs/day
- Sulfur Oxides, SO_x – 150 lbs/day

The HEP exceeds all of the above emission levels; therefore offsets are required for all five of these pollutants. The emission offsets provided shall be adjusted according to the distance of the offset from the HEP. The ratios are:

- Internal or on-site source – 1 to 1
- Within 15 miles of the same source – 1.2 to 1
- 15 miles or more from the source – 1.5 to 1

Section 4.2.5.3 allows for the use of interpollutant offsets (including PM₁₀ precursors for PM₁₀) on a case-by-case basis, provided that the applicant demonstrates that the emissions increase will not cause a violation of any ambient air quality standard. The ratio for interpollutant trading shall be based on an air quality analysis and shall be equal to or greater than the minimum offsetting requirement (the distance ratios) of this rule.

SECTION 4.3 – ADDITIONAL SOURCE REQUIREMENTS

This rule (Rule 4.3.2.1) requires that a new source not cause or make worse, the violation of an ambient air quality standard as demonstrated through analysis with air dispersion models.

RULE 2520 – FEDERALLY MANDATED OPERATING PERMITS

Requires that a project owner file a Title V Operating Permit from EPA with the District within 12 months of commencing operation. A project is subject to this requirement if any of the following apply: the project is a major stationary source (under PSD definitions), it has the potential to emit greater than 100 tons per year of a criteria pollutant, any equipment permitted is subject to New Source Performance Standards, the project is subject to Title IV Acid Rain program, or the owner is required to obtain a PSD Permit from EPA. The Title V Permit application requires that the owner submit information on the operation of the air polluting equipment, the emission control, the quantities of emissions, the monitoring of the equipment as well as other information requirements.

RULE 2540 – ACID RAIN PROGRAM

A project greater than 25 MW and installed after November 15, 1990, must submit as acid rain program permit application to the District. The acid rain requirements will become part of the Title V Operating Permit (Rule 2520).

RULE 4001 – NEW SOURCE PERFORMANCE STANDARDS

Specifies that a project must meet the requirements of the Federal New Source Performance Standards (NSPS), according to Title 40, Code of Federal Regulations, Part 60, Chapter 1. Subpart GG, which pertains to Stationary Gas Turbines, limits NO_x and SO₂ concentrations to 75 ppm and 150 ppm, respectively. This rule also limits sulfur content of the fuel to no greater than 0.8 percent by weight.

RULE 4101 – VISIBLE EMISSIONS

Prohibits air emissions, other than water vapor of more than No. 1 on the Ringelmann chart (20 percent opacity) for more than 3 minutes in any one-hour.

RULE 4102 – NUISANCE

Prohibits any emissions “which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or public or which cause or have a natural tendency to cause injury or damage to business or property.”

RULE 4201 – PARTICULATE MATTER CONCENTRATION

Limits particulates emissions from sources such as the gas turbine, cooling towers, and emergency fire water pumps to less than 0.1 grain per dry standard cubic foot of exhaust gas.

RULE 4301 – FUEL BURNING EQUIPMENT

Limits air contaminant emissions from fuel burning equipment. This rule is applicable to the HRSG and the auxiliary boiler. However, the combustion turbine is exempt from this rule because it produces power primarily through the mechanical turning of the turbine blades.

RULE 4305 – BOILERS, STEAM GENERATORS AND PROCESS HEATERS

Limits NO_x and CO concentrations to no greater than 30 ppmvd (0.036 lb/MMBtu) and 400 ppm, respectively.

RULE 4703 – STATIONARY GAS TURBINES

Establishes requirements for monitoring and record-keeping for NO_x and CO emissions from new or modified stationary gas turbines with a designed power of 0.3 MW or higher. According to this rule, at 15% O₂, NO_x and CO concentrations must be less than 9 ppm and 200 ppm, respectively.

RULE 4801 – SO₂ CONCENTRATION

Limits the emissions of sulfur compounds to no greater than 0.2 percent calculated as SO₂ per dry standard cubic foot.

RULE 8010 – FUGITIVE DUST ADMINISTRATIVE REQUIREMENTS FOR CONTROL OF FINE PARTICULATE MATTER (PM-10)

Specifies the types of chemical stabilizing agents and dust suppressant materials that can (and cannot) be used to minimize fugitive dust.

RULE 8020 – FUGITIVE DUST REQUIREMENTS FOR CONTROL OF FINE PARTICULATES (PM-10), FROM CONSTRUCTION, DEMOLITION, EXCAVATION, AND EXTRACTION ACTIVITIES

Limits fugitive dust emissions during construction through establishing a requirement that visible dust emissions shall not exceed an opacity limit of 40% for a period or periods aggregating to more than three minutes in any 1 hour.

RULE 8030 – CONTROL OF PM-10 FROM HANDLING AND STORAGE OF BULK MATERIALS

Limits the fugitive dust emissions from the handling and storage of materials. It specifies that bulk materials be transported using wetting agents, allow appropriate freeboard space in the vehicles, or be covered. It also requires that stored materials be covered or stabilized.

RULE 8060 – CONTROL OF PM-10 FROM PAVED AND UNPAVED ROADS

Specifies the width of paved shoulders on paved roads or the use of chemical dust suppressants on unpaved roadways, shoulders and medians.

RULE 8070 – CONTROL OF PM-10 FROM VEHICLE/EQUIPMENT PARKING, SHIPPING, RECEIVING, TRANSFER, FUELING AND SERVICE AREA

This rule intends to limit fugitive dust from unpaved parking areas by means of using water or chemical suppressants or the use of gravel. It also requires that the affected owners/operators shall remove tracked out mud and dirt onto public roadways once a day.

The applicant has submitted an application for an Authority to Construct with the District on July 10, 2000. The District deemed the application as incomplete on August 9, 2000 and has yet to be deemed complete at the time of the preparation of this analysis.

SETTING

CLIMATOLOGY

The climate of the southern San Joaquin Valley is characterized by hot dry summers and mild winters with relatively small amounts of precipitation. Summers are usually quite warm, with average daily maximum temperatures during July of over 97 °F. Very little precipitation occurs during the summer months because the strong high pressure blocks migrating storm systems. Occasionally, tropical air moves into the area and thunderstorms may occur over the adjacent mountains. Beginning in the fall and continuing through the winter, the storm belt and zone of strong westerly winds begins to greatly influence California. Temperature, winds and rainfall are variable during these months, and stagnant conditions occur more frequently than during summer.

Wind speeds are generally higher in summer than in winter throughout the San Joaquin Valley and are typically north-northwesterly winds. During the summer, spring, and fall the stronger winds are caused by a combination of offshore and a thermal low pressure resulting from high temperatures in the central valley. During the winter months, winds are more variable and predominantly southeasterly. Calm conditions occur more during winter, but are relatively infrequent throughout the year. Valley fog often occurs during these calm, stagnant atmospheric conditions, when temperature inversions trap a layer of cool, moist air near the surface. Tule fog, a dense, persistent fog, is a frequent wintertime occurrence. The annual rainfall in the Hanford area is only about 8 inches and most precipitation (90%) occurs from November through April. During the December-January months, daily maximum temperatures are a relatively mild 55°F, with lows averaging 36°F.

Along with the wind flow, atmospheric stability and mixing heights are important factors in the determination of pollutant dispersion. Atmospheric stability is an indicator of the air turbulence and mixing. During the daylight hours of the summer when the earth is heated and air rises, there is more turbulence, more mixing and thus less stability. During these conditions there is more air pollutant dispersion and therefore usually fewer air quality impacts from a single air pollution source like the HEP. During the winter months between storms, very stable atmospheric conditions

occur, resulting in very little mixing. Under these conditions, little air pollutant dispersion occurs, and consequently higher air quality impacts result from stationary source emissions. Mixing heights are generally lower during the winter, along with lower mean wind speeds and less vertical mixing.

AMBIENT AIR QUALITY

The project is located within the jurisdiction of the San Joaquin Valley Unified Air Pollution Control District (District). The applicable federal and California ambient air quality standards (AAQS) are presented in **AIR QUALITY Table 1**. As indicated in this table, the averaging times for the various air quality standards (the duration over which they are measured) range from one-hour to annual average. The standards are read as a mass fraction, in parts per million (ppm), or as a concentration, in milligrams or micrograms of pollutant per cubic meter of air (mg/m³ and µg/m³).

AIR QUALITY: Table 1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O ₃)	1 Hour	0.12 ppm (235 µg/m ³)	0.09 ppm (180 µg/m ³)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)
	1 Hour	35 ppm (40 mg/m ³)	20 ppm (23 mg/m ³)
Nitrogen Dioxide (NO ₂)	Annual Average	0.053 ppm (100 µg/m ³)	—
	1 Hour	—	0.25 ppm (470 µg/m ³)
Sulfur Dioxide (SO ₂)	Annual Average	80 µg/m ³ (0.03 ppm)	—
	24 Hour	365 µg/m ³ (0.14 ppm)	0.04 ppm (105 µg/m ³)
	3 Hour	1300 µg/m ³ (0.5 ppm)	—
	1 Hour	—	0.25 ppm (655 g/m ³)
Respirable Particulate Matter (PM ₁₀)	Annual Geometric Mean	—	30 µg/m ³
	24 Hour	150 µg/m ³	50 µg/m ³
	Annual Arithmetic Mean	50 µg/m ³	—
Sulfates (SO ₄)	24 Hour	—	25 µg/m ³
Lead	30 Day Average	—	1.5 µg/m ³
	Calendar Quarter	1.5 µg/m ³	—
Hydrogen Sulfide (H ₂ S)	1 Hour	—	0.03 ppm (42 µg/m ³)
Vinyl Chloride (chloroethene)	24 Hour	—	0.010 ppm (26 µg/m ³)
Visibility Reducing Particulates	1 Observation	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

The U.S.EPA, CARB, and the local air district classify an area as attainment, unclassified, or non-attainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data available, or non-compliance with the ambient air quality standards. The HEP is located in the Kings County and, as

stated above, is under the jurisdiction of the San Joaquin Valley Air Pollution Control District. This area is designated as non-attainment for both the federal and state ozone and PM₁₀ standards. **AIR QUALITY Table 2** summarizes federal and state attainment status of criteria pollutants for Kings County.

AIR QUALITY: Table 2
Federal and State Attainment Status for Kings County

Pollutant	Attainment Status*	
	Federal	State
Ozone	Serious Nonattainment	Severe Nonattainment
CO	Unclassified/Attainment	Unclassified
NO ₂	Unclassified/Attainment	Attainment
SO ₂	Unclassified	Attainment
PM ₁₀	Serious Nonattainment	Nonattainment
Lead	No Designation	Attainment

* Obtained from 40 CFR 81 and SJVUAPCD web site (www.valleyair.org).

The ambient air quality data for the proposed project, were obtained by the Applicant from two monitoring stations. Air quality data for NO₂, O₃, and PM₁₀ were obtained from stations located in Hanford (First Street station and South Irwin Street station). Since the Hanford stations do not monitor SO₂ and CO, air quality data for these pollutants were obtained from a monitoring station located in Fresno, (30 miles to the north), as the representative data for the project site. The Fresno station data for CO may reflect higher levels due to higher traffic activity than in Hanford. For the analysis, the maximum criteria pollutant concentration from the three most recent years of reported data (1996-1998) was used for each limit as the background value. These values, as well as the most restrictive AAQS are shown in **AIR QUALITY Table 3**.

AIR QUALITY: Table 3
Ambient Air Quality Monitoring Data for HEP (ppm)

Pollutant	Averaging Time	1996	1997	1998	Most Restrictive Ambient Air Quality Standard
Ozone	1 hour	0.144	0.126	0.143	0.09
	8 hour	0.121	0.106	0.113	0.08
PM ₁₀ (µg/m ³)	24 hours	120	143	146	50
	Annual Geometric Mean	35	41	30	30
	Annual Arithmetic Mean	41	46	39	50
NO ₂	1 hour	0.066	0.080	0.086	0.25
	Annual	0.014	0.014	0.014	0.053
CO	1 hour	10	8.7	9.0	20
	8 hour	6.83	5.69	5.88	9
SO ₂	1 hour	0.015	0.010	---	0.25
	3 hours	0.010	0.005	---	0.5
	24 hours	0.009	0.003	---	0.04
	Annual	0.002	0.000	---	0.03

PROJECT DESCRIPTION

This section describes the project design and criteria pollutant control devices as described in the SPPE application, and data request responses filed on August 28, 2000.

Proposed Equipment

The major equipment proposed in the application include the following (GWF 2000a):

- One General Electric (GE) Frame 6FA combustion turbine generator (CTG), with a nominal output of 67.6 MW, equipped with dry, low oxides of Nitrogen (NO_x) combustors.
- One heat recovery steam generator (HRSG), non-reheat design, with high-pressure steam (1,689 psig, 966 °F) capacity of 474,660 lb/hr. The HRSG is equipped with:
 - i. a Low-NO_x design duct burner with a firing capacity of up to 302 MMBtu/hr (high heating value[HHV]-basis);
 - ii. a selective catalytic reduction (SCR) emission control system that will use ammonia vapor in the presence of a vanadium pentoxide catalyst to reduce NO_x emissions;
 - iii. an oxidation catalyst unit to reduce CO and VOC emissions.
- A single Asea Brown Boveri (ABB) VAX condensing steam turbine generator (STG), rated at 34.4 MW.
- A cooling system consisting of a surface condenser and a three-cell mechanical draft cooling tower with high efficiency drift eliminator and a circulation water flow capacity of 125,000 gallons per minute. The cooling tower will operate 8,760 hours/year.
- A continuous emission monitoring (CEM) system.
- A natural gas-fired auxiliary boiler with a low pressure steam capacity of 100,000 lb/hr and maximum heat input of 133 MMBtu/hr (HHV basis). The boiler will be equipped with an ultra low NO_x burner system that will achieve a NO_x emission concentration of less than 9.0 ppmvd @ 3% O₂.
- A diesel-fueled emergency engine generator with 250 kW power output.

FACILITY OPERATION

The combustion turbine generator (CTG), rated at 67.6 MW, will exhaust into a HRSG. The HRSG will be a non-reheat design with duct firing which provides steam to the steam turbine and export steam for off-site customers. An average of 34.4 MW will be produced by the steam turbine. Approximately 3.3 MW will be consumed by the internal electrical demand of the plant, thus the net plant output will be 98.7 MW at annual average conditions. The project is expected to have an overall

average annual capacity factor of 85 percent or more, with the possibility that the plant availability could exceed 98 percent for a given 12-month period.

The HRSG will provide for the transfer of heat from the exhaust gases of the CTG to the feedwater, which will become steam. The proposed HRSG will be a dual pressure, natural circulation type, equipped with inlet and outlet ductwork, a duct burner, a selective catalytic reduction (SCR) system, and an oxidation catalyst. The HRSG duct burner will be a Low-NO_x design, and will be installed between the two high-pressure superheaters and will provide the capability to increase export steam generation to a maximum of 284,500 lbs/hr. The steam turbine will be multi-stage consisting of high-pressure and low-pressure turbines. The combustion turbine and duct burner will burn only natural gas.

A three-cell mechanical-draft cooling tower will provide approximately 33,800 gallons per minute of circulating cooling water to condense the turbine exhaust steam at a maximum plant load at 98 °F. The Applicant estimates a total dissolved solids (TDS) concentration of 1,166 ppm in the cooling tower water, at a designed 5.3 cycles of concentration. PM₁₀ emissions will be generated from the TDS in the water that is emitted as drift from the cooling tower.

The auxiliary boiler provides steam during periods when the HRSG is not fully operational. It will operate only when the turbine is warming up or is not in operation. A worst-case maximum of 3,844.5 hours per year is assumed for the auxiliary boiler operation.

The emergency diesel generator provides electrical power to the facility during periods of HEP maintenance or in the event of an electrical power outage. The emergency generator will also operate for 15 minutes per week for reliability confirmation. The Applicant estimates a total of 29 hours of operation per year for emergency generator.

EMISSION CONTROLS

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, will limit the formation of VOC, PM₁₀, and SO₂ emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds including mercaptan, thus resulting in relatively low emissions of the above-mentioned pollutants.

The combustion turbine generator (CTG) will employ an inlet air evaporative cooling system for maximum efficiency on hot days. In addition, the CTG will be equipped with a dry, low NO_x combustion system. The HRSG duct burner will be a Low-NO_x design, and natural gas-fired. After the duct burner, the flue gases pass through the HRSG catalyst systems to reduce NO_x, CO and VOC emissions. A selective catalytic reduction (SCR) system that will use ammonia vapor in the presence of a catalyst will reduce NO_x concentrations to 2.5 ppmvd (@ 15% O₂) in the HRSG exhaust gas. An oxidation catalyst will reduce CO and VOC concentrations to no more than 3.3 ppmvd and 2.5 ppmvd, respectively (@ 15% O₂). Additionally, continuous emission monitors (CEMs) are proposed to be installed on the HRSG exhaust stack for NO_x, CO and oxygen to assure adherence with the proposed CTG/HRSG emission limits. The CEM system will generate reports of emissions data in accordance with permit requirements and will send alarm signals to the

plant's control room when the level of emissions approaches or exceeds pre-selected limits.

The cooling tower will be equipped with a high efficiency drift eliminator to control PM₁₀ emissions. The drift eliminator will control the drift fraction to 0.0006%.

The auxiliary boiler will be equipped with an ultra low-NOx burner that will achieve a NOx emission concentration of less than 9.0 ppmvd (@ 3% O₂).

A certified low-NOx engine (7.0 g/bhp-hr) will be used to limit the NOx emissions from the emergency engine generator.

ESTIMATED PROJECT EMISSIONS

The proposed project will generate air emissions during the construction and operation of the facility. The following is a summary of the air emissions from these sources:

Criteria Pollutants Generated from Construction Activities

The HEP will include a 98.7 MW natural gas-fired, combined cycle power plant with a 115-kilovolt switchyard and the following linear and ancillary facilities:

- A 1.36 mile long transmission line that will interconnect with the existing Pacific Gas and Electric Company (PG&E) 115-kV Henrietta-Kingsburg transmission line, near the intersection of 11th Avenue and Jackson Avenue.
- A 2.8 mile long, 16-inch diameter natural gas pipeline that will connect to an existing Southern California Gas pipeline near the intersection of 11th Avenue and Armona in Hanford.
- Plant makeup and service water will be supplied from a well at the existing GWF cogeneration plant. Domestic water will be supplied from the Hanford municipal water system. Industrial wastewater from the plant will be transported via an existing main to the City of Hanford Wastewater Treatment Plant.

The proposed project construction schedule will extend over approximately 14 months, based on a 12 hours per day, six days a week schedule. Construction of the transmission line is planned to take 6 months (months 2 through 7 of project construction schedule), and construction of the natural gas line is scheduled to take 4 months (months 2 through 5). During the construction period, air emissions will be generated from the exhaust of the heavy equipment such as bulldozers, excavators, cranes, compressors, paving equipments, and from fugitive dust generated from activities such as clearing, grading and preparation of the site. **AIR QUALITY Table 4** summarizes the different levels of criteria pollutants that will be generated from the construction activities at the HEP site, the transmission line, and gas line.

AIR QUALITY: Table 4
Estimated Construction Emissions from the HEP Project
(Tons/Duration of Construction)

	VOC	CO	NO _x	SO _x	PM ₁₀	Fugitive PM ₁₀
Co-Gen Facility/Substation	27.67	47.18	54.75	4.92	6.31	3.85
Transmission Line	3.07	5.78	7.54	0.65	0.92	1.81
Natural Gas Line	7.48	11.08	8.52	0.80	1.06	0.44
Total	38.22	64.04	70.81	6.39	8.30	6.20

The equipment emissions provided above were based on EPA's emission factor calculation documents (AP-42, Volumes I and II) and the estimated number of operational hours for each piece of equipment throughout project construction.

The fugitive dust emissions were estimated using the uncontrolled emission factor from Midwest Research Institute, accounting for the redistribution of fill by doubling the excavation area, and further assuming a 50% control efficiency due to water application or equivalent dust suppression measures.

CEC staff believes that all reasonable measures should be required to reduce the air emission impacts due to construction. Additional CEC staff recommended construction emission mitigation measures are listed in the project mitigation section.

CRITERIA POLLUTANTS GENERATED FROM PROJECT OPERATION

Air emissions will be generated from operating the major project components. **AIR QUALITY Tables 5 and 6** summarize the maximum (worst-case) estimated levels of the different criteria pollutants associated with project operation. The assumptions used in calculating the air emissions in the table include:

- manufacturer guaranteed emission factors,
- the facility operating 24 hours per day, 8,760 hours per year,
- turbine/HRSG maximum annual emissions based on the turbine operating at 100% load, with maximum duct firing, and an average temperature of 630°F, and:
 - a. *for CO and VOC emissions*: 20 cold starts, 20 warm starts, 3 hot starts, 200 hold starts, 243 shut-downs (493.25 hours, total),
 - b. *for NO_x emissions*: 20 cold start-up, 20 shut-downs (71.75 hours, total),
 - c. *for PM₁₀ and SO₂ emissions*: will be highest in case of nonstop turbine operation throughout the year,
- turbine/HRSG maximum daily emissions based on the turbine operating at 100% load, with maximum duct firing, and a temperature of 15°F, and:
 - a. *for NO_x, CO and VOC emissions*: 1 cold start with a duration of 185 minutes,
 - b. *PM₁₀ and SO₂ emissions*: will be highest in case of nonstop turbine operation.

- emergency generator operating 15 minutes per week during normal plant operation (reflected in hourly and daily emission estimates), and up to 8 hours per day during annual plant maintenance and/or other outages. When the generator operates 8 hours during a day the turbine/HRSG does not operate, a total of 29 hours of emergency generator operation is included in the annual emission summary,
- the auxiliary boiler operating when the turbine has been shut down (though the boiler must be operated for a relatively brief warm-up period while the turbine is still running). The auxiliary boiler emissions are not included in the maximum daily and annual plant emission totals since the turbine/HRSG emissions are higher,
- the cooling tower operating 24 hours per day, 8,760 hours per year.

The proposed project's hourly emission of criteria air pollutants are shown in **AIR QUALITY Table 5**. This table presents emissions from the combustion turbine, cooling tower, emergency diesel generator and the auxiliary boiler. As this Table shows, the highest emissions are from the combustion turbine, with the CO and VOC emissions significantly higher during startups and shutdowns, and NO_x highest during cold startup. Hourly emissions for the emergency generator reflect 15 minutes of operation per week during normal plant operation. These higher emissions occur because the turbine is designed for maximum efficiency during full load steady state operation.

Air Quality: Table 5
Project (per CTG) Hourly Emissions (pounds per hour, lb/hr)

Operational Profile		NO _x	CO	PM ₁₀	SO _x	VOC
CTG Hold Start-up (80 minutes)	Lb/hr	6.00	208.65	*	*	40.05
	Lb/event	8.00	278.20	*	*	53.40
CTG Cold Start-up (185 minutes)	Lb/hr	12.62	638.82	*	*	97.65
	Lb/event	38.90	1,970	*	*	301.1
CTG Warm Start-up (120 minutes)	Lb/hr	7.80	246.65	*	*	45.70
	Lb/event	15.60	493.30	*	*	91.40
CTG Hot Start-up (70 minutes)	Lb/hr	9.09	97.80	*	*	17.06
	Lb/event	10.60	114.10	*	*	19.90
Shutdown (30 minutes)	Lb/hr	6.80	76.60	*	*	12.40
	Lb/event	3.40	38.30	*	*	6.20
CTG Steady State @100% load, Duct Firing, at 15 °F		10.00	8.1	7.1	0.34	4.3
CTG Steady State @100% load, Duct Firing, at 63 °F		9.20	7.2	6.5	0.31	3.2
CTG Steady State @100% load, Duct Firing, at 115 °F		8.5	6.6	6.0	0.29	3.4
Cooling Tower		--	--	0.14	--	--
Emergency Generator		1.07	0.24	0.03	0.17	0.03
Auxiliary Boiler		1.46	1.00	0.99	0.08	0.72
Worst Case Total (Highest CTG + Cooling Tower + Generator)		13.69	639.06	7.27	0.51	97.68

* Emissions of PM₁₀ and SO₂ are a function of quantity of fuel burned, thus they will be highest when the turbine operates nonstop throughout the year.

AIR QUALITY Table 6 summarizes the maximum (worst case) daily and annual estimated criteria pollutants emissions from the project, using the assumptions provided above. Turbine annual emissions are estimated based on the 100% load, duct fired at 63 °F operating mode, including startup and shutdown (as assumed in project description section) emissions. Daily emissions reflect 15 minutes per week operation of the diesel generator, during normal plant operation. Also included in the annual emission estimates, is 29 hours of operation of the emergency generator during maintenance and/or other outages, when it will operate for up to 8 hours per day.

AIR QUALITY: Table 6
Estimated Maximum Emissions from the HEP Project

Pollutant	NO_x	CO	PM₁₀	SO_x	VOC
Project Total Daily Emissions (Lb/day)	249.92	2,139.44	181.41	8.42	391.28
Project Total Annual Emissions (Ton/year)	40.48	86.94	29.0	1.39	23.41

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY – Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?			X	
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X		
d. Expose sensitive receptors to substantial pollutant concentrations?		X		
e. Create objectionable odors affecting a substantial number of people?			X	

DISCUSSION OF IMPACTS

A. Less Than Significant Impact

The proposed project is located in Kings County, and is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (District). The area is designated as non-attainment for both federal and state ozone and PM₁₀ standards. Ozone is classified by federal and state standards as serious non-attainment and severe non-attainment, respectively. PM₁₀ is designated as serious non-attainment and non-attainment by federal and state, respectively. The attainment status for all other criteria pollutants is considered to be in attainment by the state, and unclassified by federal standards due to lack of sufficient monitoring data.

The District is the lead agency for air quality planning and regulation for San Joaquin Valley Air Basin (SJVAB). It is responsible for developing that portion of the State Implementation Plan (SIP) that deals with certain stationary and area source controls and, in cooperation with the transportation planning agencies (TPAs), the development of transportation control measures (TCMs). The California Air Resources Board (CARB) is responsible for submitting a SIP to EPA.

OZONE

The Federal Clean Air Act Amendments (FCAAA) requires that the areas classified as “moderate” nonattainment and above to show “reasonable further progress” towards attainment. Reasonable further progress is defined as achieving 15% from the 1990 baseline inventory for VOC emissions by 1996, and an average of 3% per year reduction each year thereafter until attainment is reached. The substitution of NO_x emission reduction for VOC emission reductions is permitted. These target emission level reductions are referred to as “milestones.”

To demonstrate that the milestones are being achieved, EPA required districts to prepare rate of progress plans. In the post-1996 rate of progress report (ROP), for the 1999 milestone, the District demonstrated that the 9% reduction would be met through 4.5% each VOC and NO_x emission reductions. This required state and District measures to reduce VOC emissions by 22.7 tons per day (tpd) and NO_x emissions by 31.44 tpd within the SJVAB. The District, state and applicable federal measures have achieved 20.14 tpd VOC emission reductions and 57.97 tpd NO_x emission reductions. Although VOC emission reductions were short, the NO_x emission reductions were more than adequate to cover the shortfall.

Planned versus actual NO_x emission reductions (in tons per day, tpd), associated with the applicable District rules for the HEP project are:

Rule No	Rule Name	1994 projected Reduction (All Sources)	Total 1994 SIP Currency Reduction	1994 SIP Currency Reduction (SIP Creditable)
4305	Boilers, Process Heaters and Generators	35.90	37.63	13.17
4703	Stationary Gas Turbine	11.92	11.73	8.86

The Hanford Energy Park project will use Best Available Control Technology to control the project's emissions, in addition, the operational emissions of pollutants will be fully mitigated by the emissions offset credits (ERCs) obtained by the Applicant. Therefore, this project will not conflict or obstruct the implementation of the ozone rate of progress plan.

PM₁₀

As stated above, the project area is designated as "serious" nonattainment area for PM₁₀ by USEPA. The SJVAB does not meet the 24-hour and annual PM₁₀ standards and is required to reach attainment for both standards by December 31, 2001. If attainment by that date cannot be achieved, a one-time 5-year extension may be granted by the EPA. The extension would make the attainment date no later than December 31, 2006. The District's PM₁₀ Attainment Demonstration Plan (ADP) was prepared in 1997. The California Air Resources Board approved the District's PM₁₀ ADP for submittal as a revision to the SIP. The District's planning and regulatory efforts in the stationary and area source category include fugitive dust, smoke management, and stationary NO_x sources (PM₁₀ precursor).

The major proposed action areas in the ADP include amending Regulation VIII rules (Rules 8020, 8030, 8040, 8060, and 8070), from Reasonably Available Control Measures (RACM) to Best Available Control Measures (BACM), and increase its surveillance efforts to ensure compliance. The amendments to Regulation VIII will be fully implemented by 2001. These amendments are planned based on the EPA's concerns about the inadequacy of findings for the emission budgets contained in the PM₁₀ ADP.

The Hanford Energy Park project will use Best Available Control Technology to control the project's emissions, in addition, the operational emissions of pollutants will be fully mitigated by the emissions offset credits (ERCs) obtained by the Applicant. Therefore, the operation of the HEP project will not conflict or obstruct the implementation of the PM₁₀ ADP.

However, based on the above discussion, the construction emissions of the project will need to be further mitigated to comply with the implementation of the ADP for PM₁₀. The staff proposed mitigation measures for construction emissions are stated in the Mitigation section of this Initial Study.

For this project, construction emissions and operating emissions were modeled and the results of the modeling analysis were compared to ambient air quality standards.

B. Less Than Significant With Mitigation Incorporated

CONSTRUCTION IMPACTS

The following section discusses the project's short-term direct construction ambient air quality impacts, as estimated by the Applicant and separately estimated by CEC staff.

Applicant Construction Impact Analysis

The applicant modeled the emissions of the on-site main site and switchyard construction activities. This analysis was completed using the ISCST3 (Version 99155) model. A simplified approach of four surrogate point source stacks for construction equipment emission and a site-wide area source for fugitive dust modeling was employed. The emissions were modeled using the project's defined 6 a.m. to 6 p.m. work schedule. **AIR QUALITY Table 7** provides the results of this modeling analysis.

As can be seen from the modeling results provided in Table 7, the construction NO₂ and PM₁₀ impacts significantly exceed the ambient air quality standards and are therefore significant. CEC has suggested additional mitigation measures to mitigate these impacts to the greatest feasible extent.

AIR QUALITY: Table 7
Hanford Energy Park Project Ambient Air Quality Impact
Applicant Construction ISC Modeling Results

Pollutant	Averaging Period	Project Impact (µg/m ³)	Background (µg/m ³)	Total Impact (µg/m ³)	Limiting Standard (µg/m ³)	Type of Standard	Percent of Standard
NO ₂	1-Hour	575 ^a	162	737	470	CAAQS	157
	Annual	105 ^b	26	131	100	NAAQS	131
PM ₁₀	24-Hour	165	146	311	50	CAAQS	622
	Annual	49.8	46	95.8	30	CAAQS	319
CO	1-Hour	2,692	11,451	14,143	23,000	CAAQS	61
	8-Hour	1,157	7,821	8,978	10,000	CAAQS	90
SO ₂	1-Hour	274	39	313	655	CAAQS	48
	3-Hour	176	26	202	1300	NAAQS	16
	24-Hour	55.4	24	79.4	105	CAAQS	76
	Annual	12.6	5.2	17.8	80	NAAQS	22

^a – Results based on ozone limiting method (OLM) applied with maximum ambient ozone concentration of 287.5 (µg/m³)

^b – Results based on ambient ratio method (ARM) using default ratio of 0.75.

Staff Modeling Analysis

The Applicant's construction modeling results showed relatively high NO₂ and PM₁₀ concentrations. Staff performed a separate modeling analysis to confirm the

Applicant's modeled NO₂ and PM₁₀ concentrations. The following modifications were made to refine the construction emissions modeling analysis:

- The receptor height was modified from 0 meters to 1.5 meters and the receptor locations were modified to use a 100-meter offsite grid.
- The hourly emissions rates were modeled based on the 7 am to 7 pm construction schedule, and annual emission modeling was adjusted using the average hourly emission rate during the maximum 12 month emission period during construction.
- The OLM was used to screen the 1-hour NO_x modeling results to indicate those hours where the maximum OLM calculated NO₂ concentration had the potential to exceed the 1-hour standard. The OLM method was applied using the maximum monthly ozone and NO₂ background concentrations that have been monitored at the Hanford Irwin St monitoring station from 1997 through 2000 (CARB 2000).
- NO₂/NO_x ratio curves were calculated for rural stability classes and applied to the modeled 1-hour NO_x concentrations to determine the maximum 1-hour NO₂ concentrations. The NO₂ to NO_x ratio versus distance curves were calculated using the Plume Volume Molar Ratio Method (Hanrahan 1999). The background ozone and NO₂ concentrations used were the same maximum monthly concentrations as those used for the screening OLM method.
- The construction PM₁₀ fugitive dust emissions were modeled as a series of volume sources rather than a single area source. A total of 30 volume sources, evenly spaced over the area of emissions indicated by the Applicant, were modeled.

These modeling adjustments were performed to provide a more realistic modeling approach to determine the maximum near field construction impacts. It should be noted that these modifications, while they eliminate certain conservative modeling assumptions/methods, still retain many other conservative modeling assumptions that will still over estimate the near field concentrations.

AIR QUALITY Table 7a provides the results of the staff modeling analysis. As can be seen from the modeling results provided in Table 7a, the estimated construction impacts from the staff modeling analysis, are lower than those provided in the Applicant's modeling results. The staff modeling results indicate that the project construction NO₂ concentrations will not exceed ambient air quality standards and indicate significantly lower project PM₁₀ impacts.

AIR QUALITY: Table 7a
Hanford Energy Park Project Ambient Air Quality Impact
Staff Construction ISC Modeling Results

Pollutant	Averaging Period	Project Impact ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	Limiting Standard ($\mu\text{g}/\text{m}^3$)	Type of Standard	Percent of Standard
NO ₂	1-Hour	319.9 ^a	120.6 ^c	440.5	470	CAAQS	94
	Annual	58.4 ^b	26	84	100	NAAQS	84
PM ₁₀	24-Hour	53.0	146	199	50	CAAQS	398
	Annual	15.3	46	61.3	30	CAAQS	204

^a – Results based on the highest total impact NO₂ concentration found using the plume molar volume ratio method (PMVRM) and ozone limiting method (OLM) applied to the modeled 1-Hour NO_x concentrations.

^b – Results based on ambient ratio method (ARM) using a default ratio of 0.75.

^c – This background concentration is the highest background NO₂ concentration that occurred from 1997 through 1999 for the month with the maximum modeled impact (September).

The modeling results provided above are conservative as they do not include the proposed heavy equipment emission mitigation measures; the uncontrolled fugitive dust emissions from this project have been conservatively over estimated, and no monthly emission profiles were used to adjust the maximum hourly emissions to reflect the actual worst-case annual emission profile; and the controlled fugitive dust emission estimate only assumes a 50% fugitive dust suppression control factor. Additionally, the maximum PM₁₀ construction impacts occur at the property fence line and decrease significantly with distance. At a distance of 800 meters, which is the approximate distance to the nearest residential receptor, the modeled 24-hour PM₁₀ concentrations are approximately 1/3rd the maximum modeled concentration provided in Table 7a, and the modeled annual impacts are less than 1/10th of the maximum modeled concentrations provided in Table 7a.

The NO_x and PM₁₀ construction emissions will be further mitigated by the emission reduction credits (ERCs) that the Applicant has already acquired for the operations phase of the project.

Staff believes that with the inclusion of the construction mitigation measures listed below the short-term construction impacts will not be significant.

CONSTRUCTION MITIGATION

Applicant's Proposed Mitigation

As described in the applicable LORS section, there are a series of District rules under Regulation 8 that limit fugitive dust during the construction phase of a project. These rules require the use of water or chemical stabilizing agents and dust suppressants or gravel areas on site. These rules also require that the transporting of borrow fill dirt material be wetted, be covered, or sufficient freeboard be allowed. They also encourage, although do not require, the use of paved access aprons, gravel strips, wheel washing to reduce mud or dirt carry-out onto paved public roads. Since they are required by the District, the Applicant has proposed to employ these fugitive dust mitigation measures to limit their construction related PM₁₀ emissions.

Staff Proposed Mitigation

Since the modeled short-term construction impacts of both PM₁₀ and NO₂ are significant, the staff recommends additional construction equipment emission mitigation measures as part of the project's Conditions of Exemption to mitigate impacts caused by the emission of these two pollutants.

For PM₁₀ construction emissions mitigation, the staff recommends that the applicant use an oxidizing soot filter where feasible. The oxidizing soot filter is a device that replaces the muffler of the construction equipment. It reduces CO and hydrocarbon (VOC) emissions by approximately 80-90% and PM₁₀ emissions by approximately 90-99%. This technology has several operational constraints and the Conditions of Exemption are written to give the on-site engineer the latitude to remove the oxidizing soot filters when it is determined that they are not appropriate for the specific application.

For NO₂ construction emissions mitigation, the staff recommends the applicant to make a good faith effort to use available certified low NOx emission heavy-duty construction equipment. Based on EPA Tier 1 emission factors for new equipment (circa 1996-2002), the use of low NOx equipment has the potential to reduce NOx emissions by at least 15 to 20%. The Applicant will be required to determine the availability of low NOx heavy-duty construction equipment during their construction services procurement process and detail a methodology for including this factor in the construction bid analysis.

OPERATION IMPACTS

The following section discusses the project's direct ambient air quality impacts, as estimated by the Applicant, and direct and cumulative ambient air quality impacts separately estimated by the District, and evaluated by CEC staff. It should be noted that all impacts analyses were based on the emissions shown in **AIR QUALITY: Table 5**. When the District issues their Authority to Construct, the permit emission levels must be no greater than the emissions presented in this analysis in order for the impact assessment presented to remain valid.

DIRECT IMPACTS

Applicant Impact Analysis

An impact screening modeling analysis was performed for seven different turbine/HRSG operating scenarios. The scenarios evaluated included 60 percent turbine load without duct burner firing and at 100 percent turbine load with duct burner firing; with each of these two operating cases being evaluated at the expected maximum ambient temperature (115°F), the average temperature (63°F), and the expected minimum ambient temperature (15°F). An additional scenario of operating the turbine at 100 percent load without duct burner firing at the average temperature condition (63°F) was also evaluated. The HEP project's other stationary sources do not have different operational modes and therefore were not evaluated in this screening modeling assessment.

The United States Environmental Protection Agency (EPA) approved ISCST3 (Version 99155) model was used to screen the potential ambient air quality impacts

from these seven different scenarios. The ISC model is a steady-state Gaussian plume model, appropriate for regulatory use that can be used to assess pollution concentrations from a wide variety of sources associated with an industrial source complex. One year (1968) of hourly meteorological data collected at the Naval Air Station (NAS) Lemoore (NWS) station monitor, with concurrent mixing height data, was used in the modeling analysis. This meteorological data was recommended for use by and obtained from SJVAPCD. Based on the modeling analysis, the sixth scenario (60% load with no duct firing @ 115°F ambient temperature) was the worst short-term (1-, 3-, 8-hour averages) emission scenario.

A more refined modeling analysis was performed to evaluate and quantify the project ambient air quality impacts. The ISCST3 model was used for the refined modeling analysis. In addition to the turbine HRSG, the refined modeling also included the auxiliary boiler and cooling tower. For this refined modeling analysis, the applicant conducted a Good Engineering Practice (GEP) stack height analysis, using the height of the HRSG building as the controlling structure for the GEP stack height determination. Since the design heights of the stacks for the base unit, auxiliary boiler, emergency generator, and cooling tower were less than 2.5 times the HRSG building height, downwash effects were modeled for the facility using the ISCST3 model. The predicted maximum hourly concentrations of the nonreactive pollutants are summarized in **AIR QUALITY Table 8**.

Air Quality: Table 8
Hanford Energy Park Project Ambient Air Quality Impact
Applicant Operations ISC Modeling Results

Pollutant	Averaging Period	Project Impact (µg/m ³)	Background (µg/m ³)	Total Impact (µg/m ³)	Limiting Standard (µg/m ³)	Type of Standard	Percent of Standard
Annual Impacts – Turbine/HRSG, Auxiliary Boiler, and Cooling Tower							
NO ₂	Annual	0.68 ^a	26	27	100	NAAQS	27
PM ₁₀	Annual	0.63	46	47	30	CAAQS	157
SO ₂	Annual	0.05	5.2	5.2	80	NAAQS	7
Short-Term Impacts – Turbine/HRSG and Cooling Tower							
NO ₂	1-Hour	15.7	162	178	470	CAAQS	38
PM ₁₀	24-Hour	0.63	146	147	50	CAAQS	294
CO	1-Hour	795.6	11,451	12,247	23,000	CAAQS	53
	8-Hour	64.4	7,821	7,885	10,000	CAAQS	79
SO ₂	1-Hour	0.43	39	39	655	CAAQS	6
	3-Hour	0.17	26	26	1300	NAAQS	2
	24-Hour	0.04	24	24	105	CAAQS	23
Short-Term Impacts – Auxiliary Boiler							
NO ₂	1-Hour	205.7	162	368	470	CAAQS	78
PM ₁₀	24-Hour	20.8	146	167	50	CAAQS	334
CO	1-Hour	140.9	11,451	11,592	23,000	CAAQS	50
	8-Hour	31.0	7,821	7,852	10,000	CAAQS	79
SO ₂	1-Hour	11.0	39	50	655	CAAQS	8
	3-Hour	4.95	26	31	1300	NAAQS	2
	24-Hour	1.64	24	26	105	CAAQS	25

^a – Results based on ambient ratio method (ARM) using default ratio of 0.75.

The applicant results indicate that the project operational impacts would not create violations of NO₂, SO₂ or CO standards, but could further exacerbate violations of the PM₁₀ standards. The impacts from the auxiliary boiler are higher than those from the turbine due to plume downwash. In light of the existing PM₁₀ non-attainment status for the project site area the modeled impacts from the auxiliary boiler are considered to be significant. Assuming that the auxiliary boiler stack were raised to the same height as the turbine stack (24.38 meters/80 feet) the modeled impacts from the operation of the auxiliary boiler, as shown in **AIR QUALITY Table 8a**, would be considerably reduced.

Air Quality: Table 8a
Hanford Energy Park Project Ambient Air Quality Impact
Staff Revised Auxiliary Boiler ISC Modeling Results

Pollutant	Averaging Period	Project Impact (µg/m ³)	Background (µg/m ³)	Total Impact (µg/m ³)	Limiting Standard (µg/m ³)	Type of Standard	Percent of Standard
Short-Term Impacts – Auxiliary Boiler							
NO ₂	1-Hour	8.34	162	170	470	CAAQS	36
PM ₁₀	24-Hour	0.67	146	147	50	CAAQS	294
CO	1-Hour	5.70	11,451	11,457	23,000	CAAQS	50
	8-Hour	1.44	7,821	7,822	10,000	CAAQS	78
SO ₂	1-Hour	0.44	39	39	655	CAAQS	6
	3-Hour	0.19	26	26	1300	NAAQS	2
	24-Hour	0.05	24	24	105	CAAQS	23

The auxiliary boiler operational impacts, after raising the stack height to 24.38 meters, would not create violations of NO₂, SO₂ or CO standards, and would not significantly exacerbate violations of the PM₁₀ standards. Therefore, in order to mitigate the potential for plume downwash impacts from the auxiliary boiler staff has proposed Condition of Exemption AQ-C4, which requires the Applicant to furnish the auxiliary boiler with a stack that is a minimum of 24.38 meters high.

SJVUAPCD has conducted a separate modeling analysis for the HEP, and the results of their analysis are reflected in the cumulative impacts modeling analysis provided in the following pages.

There is the potential that higher short-term concentrations may occur during fumigation conditions that are caused by the rapid mixing of the plume to ground level. Fumigation conditions are generally only compared to 1-hour standards. The applicant analyzed the air quality impacts under fumigation conditions from the project turbine/HRSG and auxiliary boiler using the **SCREEN3** model. The results of the analysis, as shown in **AIR QUALITY Table 9**, indicate that the fumigation impacts would not exceed applicable 1-hour AAQS.

Air Quality: Table 9
Maximum HEP Fumigation Impacts

Source	Maximum Impact ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total ($\mu\text{g}/\text{m}^3$)	Standard ($\mu\text{g}/\text{m}^3$)	Standard
Gas Turbine/HRSG					
CO	215	11,451	11,666	23,000	CAAQS
NO ₂	4.25	162	168	470	CAAQS
SO ₂	0.12	39	39	655	CAAQS
Auxiliary Boiler					
CO	2.41	11,451	11,453	23,000	CAAQS
NO ₂	3.53	162	162	470	CAAQS
SO ₂	0.19	39	39	655	CAAQS

OPERATIONS MITIGATION

Applicant's Proposed Mitigation

As discussed in the project description section, the Applicant will apply air pollution control equipment to limit the project's emission levels. To reduce NO_x emissions, HEP proposes to use dry-low NO_x combustors in the CTG, and a Low NO_x duct burner in the HRSG. In addition, the HRSG will be equipped with an aqueous ammonia injection grid and a SCR system to further reduce NO_x emissions. To reduce CO and VOC emissions, the Applicant proposes to use a combination of good engineering and maintenance practices, along with an oxidizing catalyst located in the HRSG. The use of natural gas, will limit the project's SO₂ and PM₁₀ emissions. The use of drift eliminators on the cooling tower will reduce particulate matter originating from TDS in the circulating water. HEP intends to use drift eliminators with a design efficiency of 0.0006 percent, which is considered a high level of efficiency for cooling towers. Additionally, an ultra low NO_x burner will be used in the auxiliary boiler and the emergency generator will have a certified low NO_x engine.

Based on the discussions of the project's CO emissions in the impact section, staff believes that the project will not further contribute to violations of the ambient CO air quality standards.

On the other hand, the project's direct and cumulative impact analyses, as summarized in **AIR QUALITY Table 8**, show that the project could further worsen PM₁₀ standard violations in the San Joaquin Valley region. CARB and the District have found that NO_x and VOC emissions are precursors to ozone formation and that NO_x, SO₂, and VOC emissions can form secondary PM₁₀. Therefore, since ozone and PM₁₀ ambient air quality standards are regularly violated within San Joaquin Valley, CEC staff believes that any increase in emissions of precursors to those pollutants (NO_x, PM₁₀ and VOC) may contribute to such violations, and so must be mitigated on a 1:1 basis.

To determine the mitigation for this project the estimated project's maximum daily and quarterly emissions (based on the assumed scenarios described in project operation), were used to determine the required offsets to fully mitigate the emissions. The following available offset credits from various sources, are proposed by the Applicant.

Project Mitigation and Offsets

To fully mitigate the maximum project emissions, offsets (mitigation) equal to the maximum project emissions are required for NO_x, PM₁₀, VOC, CO and SO₂. District Rule 2102, Section 4.2 requires that the Applicant provide emission offsets, in the form of banked ERCs, for the project's emissions of NO_x, VOC, PM₁₀ and SO₂. **AIR QUALITY Table 10** emission liabilities that need to be mitigated.

AIR QUALITY: Table 10
HEP Daily and Quarterly Project Emission Liability

	NO_x	VOC	PM₁₀	SO₂	CO
Daily Emissions (lb/day)	249.92	391.28	181.41	8.42	2139.44
1 st Quarter (lb/quarter)	19,964	11,543	14,309	685	42,876
2 nd Quarter (lb/quarter)	20,186	11,671	14,468	692	43,352
3 rd Quarter (lb/quarter)	20,408	11,800	14,627	700	43,829
4 th Quarter (lb/quarter)	20,408	11,800	14,627	700	43,829
Ton/year	40.5	23.4	29.0	1.4	86.9

All air pollutant offsets provided for the project are estimated on a quarterly basis from the different determined operating sources. Staff recommends that projects be offset on a daily basis, however, since these sources operate regularly on a daily basis, staff believes that it is reasonable to use the quarterly emissions to fully mitigate the project's daily emissions. This method is consistent with the average quarterly emission method since the quarterly emissions levels are a function of the maximum daily emissions.

The Applicant is proposing several sources of offsets to fully mitigate the project's potential emissions (GWF 2000b). Calculations of the required ERCs are based on the distance of the project from different sources of offsets. The District requires a 1:1 offsetting ratio for on-site sources, a 1.2:1 offsetting ratio for the sources within 15 miles radius and a 1.5:1 offsetting ratio for the sources located farther than 15 miles from the project site. As shown in **AIR QUALITY Table 11** through **AIR QUALITY Table 15**, the Applicant has demonstrated that they have purchased or have the rights to purchase ERCs in quantities that are sufficient to offset the project. The ERC totals shown in these tables provide a complete list of the Applicant's available ERCs; however, the Applicant will only apply the quantity of ERCs that are required to fully offset the project. Therefore, any "extra" ERCs will remain the property of the Applicant and can be used or sold at a later date.

NO_x Emission Offsets

AIR QUALITY Table 11 provides a summary of the total project NO_x emissions for each quarter of the year and identifies the project offset sources. Emission reduction credits available from Hanford, LP (located in Mendota), fully mitigate the project's quarterly NO_x emissions liability. As allowed by District Rule 2201, the applicant is proposing to use NO_x ERCs from April through November (ozone peak season) to cover the 1st quarter NO_x offset deficit.

AIR QUALITY: Table 11
NO_x Offsets Available for the HEP Project
(lb/Quarter)

	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Total (lb/yr)
Total Project Emission (lb/Quarter)	19,964	20,186	20,408	20,408	80,966
Offset Source - [Distance (miles), Ratio] Hanford, LP – [> 15, 1.5:1]	19,219	41,221	63,223	41,221	164,883
Offsets Balance	7,151	-7,295	-21,741	-7,073	-28,956

* A zero balance means full mitigation, a negative balance indicates offsets are available in excess of required offset levels, and a positive balance indicates an offset deficit. Please note that the offset balance is not the same as the ERC balance.

CO Emission Offsets

AIR QUALITY Table 12 provides a summary of the total project CO emissions for each quarter of the year and identifies the project offset sources. The ERCs available from Hanford, LP (Manteca), are greater than those required to fully offset the quarterly CO emissions from the project. As allowed by District Rule 2201 (SJVAPCD, 2000), the applicant is proposing to use November and December CO ERCs to cover the 1st quarter CO offset deficit.

AIR QUALITY: Table 12
CO Offsets Available for the HEP Project
(lb/Quarter)

	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Total (lb/yr)
Total Project Emission (lb/Quarter)	42,876	43,352	43,829	43,829	173,886
Offset Source - [Distance (miles), Ratio] Hanford, LP – [> 15, 1.5:1]	40,709	187,781	134,692	100,474	463,656
Offsets Balance*	15,737	-81,835	-45,966	-23,154	-135,218

* A zero balance means full mitigation, a negative balance indicates offsets are available in excess of required offset levels, and a positive balance indicates an offset deficit. Please note that the offset balance is not the same as the ERC balance.

PM₁₀ Emission Offsets

AIR QUALITY Table 13 provides a summary of the total project PM₁₀ emissions for each quarter of the year and identifies the project offsets sources.

AIR QUALITY: Table 13
PM₁₀ Offsets Available for the HEP Project
(lb/Quarter)

	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Total (lb/yr)
Total Project Emission (lb/Quarter)	14,309	14,468	14,627	14,627	58,031
Offset Source - [Distance (miles), Ratio]					
GWF, Corcoran - [< 15, 1.2:1]	5,699	5,087	7,081	6,732	24,599
GWF, Fresno - [>15, 1.5:1]	3,075	3,075	3,075	3,075	12,300
GWF, Turlock - [>15, 1.5:1]	3,855	3,652	2,906	3,850	14,263
GWF, Fresno - [>15, 1.5:1]	0	0	0	11,672	11,672
GWF, Pixley - [>15, 1.5:1]	0	0	0	12,372	12,372
GWF, Earlimart - [>15, 1.5:1]	0	0	0	5,078	5,078
GWF, Twisselman - [>15, 1.5:1]	0	0	0	1,000	1,000
Offsets Balance*	4,940	5,744	4,739	-15,681	-258

* A zero balance means full mitigation, a negative balance indicates offsets are available in excess of required offset levels, and a positive balance indicates an offset deficit. Please note that the offset balance is not the same as the ERC balance.

The Applicant is proposing to use PM₁₀ ERCs available in the 4th quarter to offset project emissions in the other three quarters of the year. This method of offset balancing does not conform to the current requirements of Rule 2201 (SJVAPCD 2000). However, the District is currently in consultation with USEPA for the approval of a revised Rule 2201, which does allow the use of PM₁₀ ERCs from the peak PM₁₀ concentration season (4th and 1st quarters) to be offset emissions from the other quarters of the year. The District does not plan on implementing this rule until USEPA formally approves it, so the Applicant with either have to wait until the revised rule is approved by USEPA or obtain additional PM₁₀ ERCs to conform with the current requirements of Rule 2201.

VOC Emission Offsets

The applicant has obtained four sources of ERCs to mitigate the VOC emissions of the project. These sources exceed the values necessary to fully mitigate the project's VOC emissions for each quarter. **AIR QUALITY Table 14** provides a summary of the total project VOC emissions offsets for each quarter of the year from the different sources.

AIR QUALITY: Table 14
VOC Offsets Available for the HEP Project
(lb/Quarter)

	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Total (lb/yr)
Total Project Emission (lb/Quarter)	11,543	11,671	11,800	11,800	46,814
Offset Source - [Distance (miles), Ratio]					
Hanford, LP - [>15, 1.5:1]	40	184	131	98	453
World Oil - [>15, 1.5:1]	12,029	13,701	14,447	13,112	53,289
World Oil - [>15, 1.5:1]	1,306	1,709	1,829	1,157	6,001
Frueholf - [>15, 1.5:1]	5,480	6,496	4,696	6,616	23,288
Offsets Balance*	-1,027	-3,056	-2,269	-2,189	-8,540

* A zero balance means full mitigation, a negative balance indicates offsets are available in excess of required offset levels, and a positive balance indicates an offset deficit. Please note that the offset balance is not the same as the ERC balance.

SO₂ Emission Offsets

The SO₂ emissions, as shown in **AIR QUALITY Table 15**, will be offset by an on-site ERC source that fully mitigates the project's SO₂ emissions.

AIR QUALITY: Table 15
SO₂ Offsets Available for the HEP Project
(lb/Quarter)

	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Total (lb/yr)
Total Project Emission (lb/Quarter)	685	692	700	700	2,777
Hanford, LP – project site, Ratio 1:1]	700	700	700	700	2,800
Offsets Balance*	-15	-8	0	0	-23

* A zero balance means full mitigation, a negative balance indicates offsets are available in excess of required offset levels, and a positive balance indicates an offset deficit. Please note that the offset balance is not the same as the ERC balance.

Staff Proposed Mitigation

Neither EPA nor CARB have raised any questions regarding the validity of the ERCs provided. Staff, therefore, finds that these ERCs are valid to offset the HEP emission impacts upon SJVAPCD's implementation of their revised Rule 2201. Staff finds that with the proposed emission controls and ERCs provided, there is no further mitigation necessary for the HEP operating emission impacts.

C. Less Than Significant With Mitigation Incorporated

As described in the Mitigation Section, the project emissions will be fully offset to ensure a net air quality benefit with the SJVAB. Additionally, a cumulative modeling analysis was performed. This modeling analysis identifies whether the project, along with other identified air pollution sources known to be under development in the project area, would create a cumulative air quality impact.

CUMULATIVE IMPACTS MODELING ANALYSIS

A cumulative air quality modeling analysis was performed by SJVAPCD, in consultation with CEC staff, to assess the impacts from the project combined with the existing GWF facility and with other nearby air pollutant emissions sources with ATCs and under permit review. SJVAPCD investigated a large number of potential sources in the general area of the project to include in the analysis. The other sources included are provided as follows:

SOURCES WITH AUTHORITY TO CONSTRUCT

- Mediaone - 160 HP IC Engine
- Kings Waste & Recycling Authority - 460 HP IC Engine
- Mineral King Minerals - 8.0 MMBtu/hr Low NO_x Burner (Drying Operation)
- NORWESCO, Inc. - Molding Operation (Carousel Rotational Molding Machine)
- NORWESCO, Inc. - Molding Operation (Carousel Rotational Molding Machine)

SOURCES WITH AUTHORITY TO CONSTRUCT APPLICATIONS IN REVIEW

- Kings Waste & Recycling Authority - 460 HP IC Engine

These sources were selected because of their close proximity to the project, within six miles, and their potential to add to the cumulative pollutant concentration as a result of new sources not reflected in the background concentrations.

The Kings Industrial Park is likely to have new and modified sources, as the City of Hanford is aggressively seeking the development of this industrial park. Other potential projects could include expansion at the existing Del Monte food processing facility and the existing Pirelli facility. However, no other nearby potential projects have filed applications and hence, specific information regarding emissions or flue gas parameters is unavailable for use in a cumulative analysis.

The results of the District's analysis (SJVAPCD 2001), provided in **AIR QUALITY Table 16**, indicate that there would be no cumulative impacts that would cause exceedances of air quality standards or significantly increase existing exceedances of air quality standards.

Air Quality: Table 16
Hanford Energy Park Project Ambient Air Quality Impact
SJVAPCD Cumulative ISC Modeling Results^a

Pollutant	Averaging Period	Cumulative Impact ^b ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	Limiting Standard ($\mu\text{g}/\text{m}^3$)	Type of Standard	Percent of Standard
Annual Impacts							
NO ₂	Annual	14.13	26	40	100	NAAQS	40
PM ₁₀	Annual	0.51	46	47	30	CAAQS	157
SO ₂	Annual	2.22	5.2	7.4	80	NAAQS	9
Short-Term Impacts							
NO ₂	1-Hour ^c	278.39	162	440	470	CAAQS	94
PM ₁₀	24-Hour	2.36	146	148	50	CAAQS	296
CO	1-Hour	118.5	11,451	11,570	23,000	CAAQS	50
	8-Hour	98.9	7,821	7,920	10,000	CAAQS	79
SO ₂	1-Hour	55.47	39	94.5	655	CAAQS	14
	3-Hour	116.04	26	142	1300	NAAQS	11
	24-Hour	8.90	24	33	105	CAAQS	31

^a – These results represent a revised modeling run that addressed CEC and Applicant comments regarding the modeling of the emergency engine, as well as, correcting the SJVAPCD auxiliary boiler concentrations to those presented in **AIR QUALITY TABLE 8a**.

^b – The cumulative impacts shown include the operations of all of the HEP sources (Turbine/HRSG, Auxiliary Boiler, Cooling Tower, and Emergency Engine), as well as, the operating impacts of the other cumulative emission sources located within 6 miles of the project site.

^c – Results include application of the ambient ratio method (ARM) using default ratio of 0.75 for the emergency generator. Additionally, all 1-Hour results have been revised to include normal 15-minute engine testing emissions, while the other short-term averaging periods were not revised and include continuous full-load engine operation.

The modeling results provided above are conservative, and are believed to over estimate the potential impacts from the emergency engine, which for this modeling analysis makes up the majority of the modeled cumulative impact for all pollutants. Using a less conservative modeling approach for the emergency engine could lower the modeled impacts from the emergency engine significantly.

For the modeling results provided above to be valid the District must include in the Applicant's operating permit the following condition for the testing of the emergency engine.

- The testing of the emergency engine shall be limited to 15 minutes per week and shall be conducted between the hours of 9 am and 5 pm.

Applicant's Proposed Mitigation

See the mitigation description under impact issue "b".

Staff Proposed Mitigation

See the mitigation description under impact issue "b".

D. Less Than Significant With Mitigation Incorporated

EXISTING RESIDENTIAL AND SENSITIVE RECEPTORS

Power Plant Site

As described in the Hanford Application for Small Power Plant Exemption (SPPE), there are approximately 15 residences located within 1.5 miles of the HEP site. The nearest residence to the proposed facility is located at the southwest corner of Idaho Avenue and 10th Avenue, approximately 3,200 feet from the site. There are no schools, hospitals, elderly care facilities, or other special types of air pollution sensitive receptor facilities within the general vicinity of the project.

LINEAR FACILITIES

The proposed transmission route crosses approximately 1.36 miles of property that is either developed or undeveloped industrial. No residences are located within a quarter mile of the proposed transmission line, and no residential developments are currently proposed in the study area along the route.

With regard to the natural gas line, a number of residences are within a quarter-mile of the proposed natural gas pipeline route. The closest receptor is a rural residence located approximately 400 feet west of the route at milepost 1.5, just north of the intersection of 11th Avenue and Iona Avenue.

There are no schools, hospitals, parks, or other sensitive land uses located within the one-mile corridor study area identified for the proposed transmission and natural gas pipeline routes.

TEMPORARY CONSTRUCTION EMISSIONS

As described earlier under impact issue “b”, the proposed project would generate temporary emissions from constructing the Hanford Energy Park and the associated transmission and natural gas pipelines. As a result, residential land uses may experience short-term adverse air quality impacts. However, through the implementation of the suggested mitigation measures during construction, it is assumed that the project would not result in any significant air quality impacts.

OPERATION EMISSIONS

As described earlier under impact issue “b”, the proposed project would generate a substantial level of criteria pollutant emissions from operating the 98.7-megawatt (MW) natural gas-fired combined cycle power plant. However, these emissions would be completely offset through the purchase of emission reduction credits (ERCs). In addition to these emissions being offset, the closest sensitive receptor is located over one-mile from the proposed site. As a result, it is assumed that the criteria pollutant emission generated from this project would not cause any significant air quality impacts to sensitive receptors.

Applicant’s Proposed Mitigation

See the mitigation description under impact issue “b”.

Staff Proposed Mitigation

See the mitigation description under impact issue “b”.

E. Less Than Significant Impact

No impact is anticipated, since the facilities’ gas turbine/HRSG SCR systems’ ammonia slip will be limited to 10 ppmvd at the exhaust, which is below most published ammonia odor threshold values. The ambient ammonia concentrations, after dispersion, will be under the odor thresholds. No other significant emissions of odorous compounds will result from the gas turbine/HRSG, cooling tower, auxiliary boiler and emergency engine generator.

CUMULATIVE IMPACTS

The Hanford Energy Park Project, with the implementation of the measures contained in the Conditions of Exemptions specified below, will not, either alone or in combination with other identified projects in the area, cause or contribute to any new or existing violations of applicable ambient air quality standards.

CONCLUSIONS

The Hanford energy Park Project, with the implementation of the Conditions of Exemption, will be constructed and operated in compliance with all applicable laws, ordinances, regulations, and standards identified previously in this Section. We therefore conclude that the Hanford Energy Park Project will not create any significant direct or indirect adverse air quality impacts. Based upon these findings staff recommends that the Commission approve the Small Power Plant Exemption

with the following proposed Conditions of Exemption to be included in the Commission Decision.

PROPOSED CONDITIONS OF EXEMPTION

GENERAL CONDITIONS

AQ-G1 The project owner shall obtain all necessary authority-to-construct air quality permits from SJVUAPCD prior to commencing construction; and upon start-up of operations shall obtain, in a timely manner, permits-to-operate as required by the authority-to-construct permits and SJVUAPCD regulations.

CONSTRUCTION CONDITIONS

AQ-C1 Prior to the commencement of project construction, the project owner shall prepare a construction Fugitive Dust Mitigation Plan that will specifically identify fugitive dust mitigation measures that will be employed for the construction of the HEP project and related facilities.

- a. The Construction Fugitive Dust Mitigation Plan shall specifically identify measures to limit fugitive dust emissions from construction of the project site, the transmission lines and the natural gas lines. Measures that shall be addressed include the following:
 - the identification of the employee parking area(s) and surface of the parking area(s);
 - the frequency of watering of unpaved roads and disturbed areas;
 - the application of chemical dust suppressants;
 - the stabilization of storage piles and disturbed areas;
 - the use of gravel in high traffic areas;
 - the use of paved access aprons;
 - the use of posted speed limit signs;
 - the use of wheel washing areas prior to large trucks leaving the project site; and
 - the methods that will be used to clean tracked-out mud and dirt from the project site onto public roads.
- b. The following measures should be addressed for the transportation of the borrow fill material to the HEP project site and the transmission and natural gas line sites, if any, and the transportation of export soils and construction debris:
 - the use of covers on the vehicles;
 - the wetting of the material; and
 - insuring appropriate freeboard of material in the vehicles.

Verification: At least sixty (60) days prior to the start of construction, or a lesser period of time mutually agreed to by the project owner and the Compliance Project Manager (CPM), the project owner shall provide the CPM with a copy of the Construction Fugitive Dust Mitigation Plan for approval.

AQ-C2 The project owner shall ensure that all heavy earthmoving equipment including, but not limited to, bulldozers, backhoes, compactors, loaders, motor graders and trenchers, and cranes, dump trucks and other heavy duty construction related trucks, have been properly maintained and the engines tuned to the engine manufacturer's specifications. The project owner shall also install oxidizing soot filters on all suitable construction equipment used either on the power plant construction site or associated linear construction sites. Where the oxidizing soot filter is determined to be unsuitable, the owner shall install and use an oxidation catalyst. Suitability is to be determined by an independent California Licensed Mechanical Engineer who will stamp and submit for approval an initial and all subsequent Suitability Reports as necessary containing at a minimum the following:

Initial Suitability Report:

- A list of all fuel burning, construction related equipment used.
- A determination of the suitability of each piece of equipment to firstly work appropriately with an oxidizing soot filter,
- A determination of the suitability of each piece to equipment to secondly work appropriately with an oxidation catalyst,
- If a piece of equipment is determined to be unsuitable for an oxidizing soot filter, an explanation by the independent California Licensed Mechanical Engineer as to the cause of this determination and,
- If a piece of equipment is determined to be unsuitable for both an oxidizing soot filter and an oxidizing catalyst, an explanation by the independent California Licensed Mechanical Engineer as to the cause of this determination.

Installation Report:

- Following the installation of either the oxidizing soot filter or oxidizing catalyst as prescribed in the Initial Suitability Report, a California Licensed Mechanical Engineer will issue an Installation Report that either confirms that the installed device is functioning properly or that installation was not possible and the cause. Attached to the Installation Report shall be a copy of receipts of purchase for the appropriate equipment and payment for labor to install if applicable.

Subsequent Suitability Reports:

If a piece of construction related equipment is subsequently determined to be unsuitable for an oxidizing soot filter after such installation has occurred, the filter may be removed immediately. However notification must be sent to the

CPM for approval containing an explanation for the change in suitability within 10 days. Changes in suitability are restricted to three explanations that must be identified in any subsequent suitability report. Changes in suitability may not be based on the use of high-pressure fuel injectors, timing retardation and/or reduced idle time.

- a. The filter or catalyst is reducing normal availability of the construction equipment due to increased downtime, and/or power output due to increased back pressure by 20% or more.
- b. The filter or catalyst is causing or reasonably expected to cause significant damage to the construction equipment engine.
- c. The filter or catalyst is causing or reasonably expected to cause a significant risk to nearby workers or the public.

Verification: The project owner shall submit to the CPM for approval, the initial suitability report stamped by an independent California Licensed Mechanical Engineer, 15 days prior to breaking ground on the project site. The project owner will submit to the CPM for approval, the installation report, stamped by an independent California Licensed Mechanical Engineer prior to the use of the identified construction equipment. The project owner will submit to the CPM for approval, subsequent suitability reports as required, stamped by an independent California Licensed Mechanical Engineer no later than 10 working day following a change in the suitability status of any construction equipment.

AQ-C3 The project owner shall make a good faith effort to use available certified low-NOx emission heavy-duty construction equipment.

Verification: At least fifteen (15) days prior to beginning the construction bid solicitation process, the project owner shall submit to the CPM a bid evaluation plan for approval. This bid evaluation plan shall include a requirement that all bidders include information regarding the availability of low-NOx emission equipment and shall include a methodology for including this information in the overall bid evaluation process. The project owner shall maintain all construction bid records on the site for six (6) months following the start of commercial operation.

AQ-C4 The project owner shall furnish the auxiliary boiler with a stack that is at least 24 meters high.

Verification: At least fifteen (15) days prior to beginning construction, the project owner shall submit to the CPM an engineering design package, plans or drawings that show the design height of the auxiliary boiler stack.

REFERENCES

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BIOLOGICAL RESOURCES

Testimony of Bradley S. Norling

INTRODUCTION

This section of the Small Power Plant Exemption (SPPE) Initial Study presents an analysis of potential impacts to biological resources from the GWF Power Systems Company, Inc. (Applicant's) proposal for the construction and operation of the Hanford Energy Park (HEP). This analysis is primarily directed toward impacts to state and federally listed species, species of special concern, wetlands, and other areas of critical biological concern. This document presents information regarding the effected biotic community, the potential environmental impacts associated with the construction and operation of the proposed project, and where necessary, specifies mitigation planning and compensation measures to reduce potential impacts to non-significant levels. This document also determines compliance with applicable laws, ordinances, regulations and standards (LORS), and specifies conditions for exemption.

This analysis is based, in part, on information provided as of May 19, 2000 from the Applicant's SPPE application, Docket Number 00-SPPE-1, Issue Identification Report for the HEP, dated July 26, 2000, responses to data requests, staff's August 3 and 24, 2000 site visits, and discussions with various resource agency representatives (GWF 2000a,b).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

ENDANGERED SPECIES ACT OF 1973

Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq., designate and provide for protection of threatened and endangered plant and animal species, and their critical habitat.

MIGRATORY BIRD TREATY ACT

Title 16, United States Code, sections 703 through 711, prohibits the take of migratory birds, including nests with viable eggs.

CLEAN WATER ACT OF 1977

Title 33, United States Code, sections 1251–1376, and Code of Federal Regulations, part 30, section 330.5(a)(26). The Act requires the permitting and monitoring of all discharges to surface water bodies. Section 404 permits from the U.S. Army Corps of Engineers for discharges from dredged or fill materials into waters of the U.S, including wetlands, and Section 401 permits from the state water resources control board for the discharge of pollutants are issued under the authority of this Act.

STATE

CALIFORNIA ENDANGERED SPECIES ACT OF 1984

Fish and Game Code, sections 2050 through 2098, protects California's rare, threatened, and endangered species.

CALIFORNIA CODE OF REGULATIONS

Title 14, California Code of Regulations, sections 670.2 and 670.5, lists animals of California designated as threatened or endangered.

FULLY PROTECTED SPECIES

Fish and Game Code, sections 3511, 4700, 5050, and 5515, prohibits take of plants and animals that are fully protected in California.

SIGNIFICANT NATURAL AREAS

Fish and Game Code, section 1930, designates certain areas such as refuges, natural sloughs, riparian areas and vernal pools as significant wildlife habitat.

STREAMBED ALTERATION AGREEMENT

Fish and Game Code, section 1600, reviews project impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions and other disturbances.

NATIVE PLANT PROTECTION ACT OF 1977

Fish and Game Code, section 1900 et seq., designates state rare, threatened, and endangered plants.

SETTING

Regionally, the site is located in the southern portion of the San Joaquin Valley in northern Kings County, California. Historically, the San Joaquin Valley contained a variety of natural lands and habitats that supported numerous plant and animal species. Since the turn of the century, however, much of the original natural communities within the Valley have been converted to urban or agricultural land uses. Remaining areas of natural vegetation are fragmented, scattered, and rarely found as large contiguous areas. These remaining natural areas represent less than 5 percent of the total area within the San Joaquin Valley (USFWS 1998). The loss of habitat has resulted in the elimination of many species of wildlife and the reduction of populations of many other species of wildlife. A list of sensitive species that could occur in the vicinity of the HEP is provided in **Biological Resources Table 1**.

**BIOLOGICAL RESOURCES Table 1: Sensitive Species Known to Occur in the
Vicinity of the HEP Project Area**
(GWF Power Systems, May 2000)

Sensitive Plants	Status*
California jewelflower (<i>Caulanthus californicus</i>)	FE
Recurved larkspur (<i>Delphinium recurvatum</i>)	FSC/SSC
Slough thistle (<i>Cirsium crassicaule</i>)	FSC

Sensitive Wildlife	Status
Swainson's hawk (<i>Buteo swainsoni</i>)	ST
Burrowing owl (<i>Athene cunicularia</i>)	SSC
Loggerhead shrike (<i>Lanius ludovicianus</i>)	SSC
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	SE/FE/FP
California tiger salamander (<i>Ambystoma californiense</i>)	SSC
Tulare grasshopper mouse (<i>Onychomys torridus tularensis</i>)	SSC
San Joaquin pocket mouse (<i>Perognathus inornatus inornatus</i>)	SSC
Tipton kangaroo rat (<i>Dipodomys nitratoideus nitratoideus</i>)	SE/FE
Fresno kangaroo rat (<i>Dipodomys nitratoideus exilis</i>)	SE/FE
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	ST/FE
American badger (<i>Taxidea taxus</i>)	SSC
Longhorn fairy shrimp (<i>Branchinecta longiantenna</i>)	FE
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	FE
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>)	FT

* **Status legend:** CNPS List 1B = Plants rare or endangered in California and elsewhere (California Native Plant Society 1994), SSC = State Species of Special Concern (CDFG 1992), FSC = Federal Species of Special Concern, FE = Federally listed Endangered, FT = Federally listed Threatened, SE = State listed Endangered; ST = State listed Threatened and FP = State Fully Protected.

The proposed HEP project area is located approximately three miles south of downtown Hanford, California within the southwest quarter of Section 13, Township 19 South, Range 21 East. Topography on the site is flat with a maximum relief across the area of approximately 10 feet. The proposed plant site is located within the boundaries of the Kings Industrial Park, which has historically been used for agricultural purposes but has not been actively farmed for several years. Currently the site and laydown area consist of non-native grassland and ruderal vegetation. No dens or burrows were observed on the site proper. Much of the immediate area surrounding the HEP project site has been cleared of native vegetation and is currently undeveloped industrial land that has been previously disturbed by historical agricultural activities. The remaining remnant areas of native vegetation are restricted only to fallow farm fields, along the existing railroad right-of-way, along fence lines, and along agricultural drainage sumps. Two irrigation ditches, the Lakeside Ditch and Sand Slough, are located to the west and south of the HEP. These ditches transfer irrigation water from the Kings River located approximately 10 miles to the north, to agricultural end users and provide storm water drainage transfer for the region to ground water recharge basins. The banks of these ditches serve as wildlife travel corridors, as several tracks were observed.

The proposed natural gas pipeline (3.45 miles) would run from the south end of the proposed HEP site, westward approximately .3 miles along the north shoulder of

Idaho Avenue. At the intersection of Idaho and 11th Avenue the proposed pipeline would turn to the north and run along 11th Avenue, the proposed pipeline would turn north and run along 11th Avenue for approximately 3.2 miles and connect to an existing Southern California Gas Company line near the intersection of 11th Avenue and Hanford-Aroma Road.

The preferred transmission route would be approximately 1.7 miles long and travel west on Idaho Avenue, then south on 11th Avenue to a new switchyard located at the northeast corner of Jackson Avenue and 11th Avenue. Habitats along this route are predominantly a mixture of ruderal, agricultural, and non-native grassland. No kit fox dens, kangaroo rat burrows, or burrowing owl burrows were observed along this route.

Water supply needs will be obtained from a well that currently exists on site and from an existing city domestic water connection.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				X
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES -- Would the project:				
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

DISCUSSION OF IMPACTS

The environmental checklist items that address potential impacts to biological resources are discussed below.

A. Less Than Significant With Mitigation Incorporated

The proposed project is located within the range of several listed species (Biological Resources Table 1). Many of these, such as the San Joaquin kit fox, Tipton kangaroo rat, and Fresno kangaroo rat, are known to use fallow fields. This is particularly true in areas such as Kings County where little natural habitat remains. Mammal tracks observed during site visits confirmed the presence of small canids (possibly kit fox) and kangaroo rats. The species of kangaroo rat was not confirmed and could be one of the listed species or the Hermann's kangaroo rat, a more common and widespread species. Nonetheless, the area represents potential habitat for the listed species and the project would result in the permanent and temporary loss of habitat.

Information provided by the applicant in December 2000 helped to refine previous estimates of permanent and temporary habitat acreage impacts. The following table (**Biological Resources Table 2**) identifies the HEP acreage impacts to wildlife habitat.

Biological Resources Table 2: Estimates of Permanent and Temporary Loss of Habitat (Acres) from the Proposed HEP Facility

	Permanent	Temporary
Plant Site	5.0	0
Laydown Area	0	3.0
Gas pipeline	0	8.4
Switchyard	1.0	0
Preferred T-Line	0.1	9.9
Totals:	6.1	21.3

Loss of habitat shall be mitigated by providing compensatory habitat known to support the listed species. Final compensation ratios will be determined through consultation with U.S. Fish and Wildlife Service (USFWS) but are expected to be 1:1 for permanent and 0.5:1 for temporary habitat losses. To avoid a lengthy Section 10(a) formal consultation under the federal Endangered Species Act, the applicant has requested and received coverage from the USFWS under an existing master endangered species permit held by the Kern Water Bank. Under this arrangement, the applicant will purchase habitat credits from the existing Kern Water Bank mitigation bank. Mitigation credits will cost about \$2,375 per acre, including endowment costs, plus a \$5,000 transaction fee.

The HEP Application for Small Power Plant Exemption stated that the proposed plant may provide process heat or electricity to other, new developments in the future (GWF 2000a). Should this occur, indirect impacts of additional habitat loss associated with these new facilities would be addressed thorough the Energy Commission's Amendment process.

To eliminate or minimize the amount of take that might occur during construction, the Applicant will conduct wildlife surveys 14 days prior to commencement of construction in accordance with CDFG and USFWS approved survey methods. Any known or potential San Joaquin kit fox dens or Tipton or Fresno kangaroo rat burrows will be mapped and flagged for avoidance. If damage or destruction to known or potential kit fox dens cannot be avoided, the dens will be monitored and then carefully excavated and the animals allowed to escape. All known and potential excavated dens will be replaced with artificial dens at a ratio of 2:1 and 1:1, respectively.

Cooling tower drift is the mist that is emitted into the atmosphere as a result of the power plant cooling process. Makeup water used in this process will contain water conditioning chemicals to minimize corrosion and control the formation of mineral scale and biofouling. In addition, an organic phosphate solution will be added to the circulating water system as a sequestering agent. To prevent biofouling in the circulating water system, sodium hypochlorite will be used as a biocide. Despite the use of these chemicals in the cooling water system, cooling tower deposition from the HEP is not expected to cause any long-term appreciable damage to surrounding vegetation, however, there may be some temporary, minor damage to vegetation directly adjacent to the main cooling towers due to occasional unfavorable wind

conditions. Because the vegetation surrounding the site is mainly ruderal, this impact is not expected to be significant.

Plant construction and operation activities will result in a minor increase in additional traffic, due to a minimal increase in construction personnel and existing staff after the expansion. Traffic at night can be especially hazardous to nocturnal species such as the San Joaquin kit fox. However, the traffic generated by this project will be minor and is not expected to result in significant impacts.

Construction of the new transmission line would not likely pose a significant threat for avian collisions because it will generally be quite visible, the project area is not located in a major migration corridor, and there is no habitat within or adjacent to the project area that would support large populations of flocking birds. In addition, the new transmission line would be located adjacent to the existing transmission line corridor, further reducing the potential for collisions.

The new transmission line could pose an electrocution hazard to raptors. Electrocution is a well-documented source of mortality for raptors and the vast majority of electrocutions involve electric distribution lines rather than high voltage lines (Avian Power Line Interaction Committee [APLIC] 1994). This impact can be mitigated by designing poles according to criteria presented in Suggested Practices for Raptor Protection on Powerlines: the State of the Art in 1994 (APLIC, 1994).

B. No Impact

The HEP project area is outside of any riparian habitats or sensitive natural communities as identified by the HEP or in local or regional plans.

C. No Impact

There are no Federally protected wetlands, including vernal pools and/or marsh habitat within or adjacent to the HEP area. In addition, no filling or hydrological interruption of any agricultural ditches and/or sumps is expected.

D. Less Than Significant

The project will result in the loss of about 5 acres of habitat which would not interfere substantially with the movement of wildlife species or impede the use of nursery sites. Construction of the transmission line would result in temporary habitat disturbance and will avoid any dens or burrows. No dens or burrows were observed along the other linear routes.

E. No Impact

The proposed project will not conflict with any local policies or ordinances.

F. No Impact

Implementation of the proposed project would not interfere with or conflict with any state or community conservation plans.

CUMULATIVE IMPACTS

Cumulative impacts are those that result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future action, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The project will result in the loss and disturbance of 27.4 acres which will cumulative contribute to significant habitat losses from past development activities in Kings County. Much of the remaining habitat is small and highly fragmented. Providing off-site compensatory habitat in the Kern Water Bank mitigation bank will add contiguous acreage to a larger, intact area and result in a greater environmental benefit than if compensated by protecting a smaller parcel similar in size to the impacted area. Therefore, the compensatory mitigation proposed will reduce cumulative impacts to less than significant levels.

CONCLUSIONS

The project will result in less than significant impacts to biological resources with the implementation of recommended and required habitat compensation, pre-construction surveys, and on-site avoidance mitigation measures.

PROPOSED CONDITIONS OF EXEMPTION

The following Biological Resources Conditions of Exemption are proposed by Energy Commission staff:

DESIGNATED BIOLOGIST

BIO-1 Site mobilization shall not begin until a Staff approved Designated Biologist is available to be on site.

Protocol: The Designated Biologist must meet the following minimum qualifications:

- A Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;
- At least three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
- At least one year of field experience with biological resources found in or near the project area; and
- An ability to demonstrate to the satisfaction of the Staff the appropriate education and experience for the biological resources tasks that must be addressed during project construction and operation.

If the Staff determines the proposed Designated Biologist to be unacceptable, the project owner shall submit another individual's name and qualifications for consideration. If the approved Designated Biologist needs to be replaced, the project owner shall obtain approval of a new Designated Biologist by submitting to the Staff the name, qualifications, address, and telephone number of the proposed replacement. No disturbance will be allowed in any designated sensitive areas until the Staff approves a new Designated Biologist and the new biologist is on site.

Verification: At least 60 days prior to the start of any site mobilization activities, the project owner shall submit to the Staff for approval, the name, qualifications, address and telephone number of the individual selected by the project owner as the Designated Biologist. If a Designated Biologist is replaced, the information on the proposed replacement, as specified in the condition, must be submitted in writing at least ten working days prior to the termination or release of the preceding Designated Biologist.

BIO-2 The Staff approved Designated Biologist shall perform the following during project construction and operation:

- Advise the Applicant's Construction Manager on the implementation of the Biological Resource Conditions of Exemption;
- Supervise or conduct mitigation, monitoring and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as, wetlands and special status species; and
- Notify the Applicant's and the Staff of non-compliance with any Biological Resources Conditions of Exemption.

Verification: During project construction, the Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the Staff. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

BIO-3 The Applicant's Construction Manager shall act on the advice of the Designated Biologist to ensure conformance with the Biological Resources Conditions of Exemption.

Protocol: The Applicant's Construction Manager shall halt, if necessary, all construction activities in areas specifically identified by the Designated Biologist as sensitive to assure that potential significant biological resource impacts are avoided.

The Designated Biologist shall:

- Inform the Applicant and the Construction Manager when to resume construction, and

- Advise the Energy Commission Staff if any corrective actions are needed or have been instituted.

Verification: Within two (2) working days of a Designated Biologist notification of non-compliance with a Biological Resources Condition of Exemption or a halt of construction, the project owner shall notify the Staff by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a condition. For any necessary corrective action taken by the Applicant, a determination of success or failure will be made by the Staff within five (5) working days after receipt of notice that corrective action is completed, or the project owner will be notified by Staff that coordination with other agencies will require additional time before a determination can be made.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-4 The Applicant shall submit to the Staff for review and approval a copy of the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and shall implement the measures identified in the plan. Any changes made to the adopted BRMIMP must be made in consultation with Energy Commission staff and USFWS.

Protocol: The final BRMIMP shall identify:

- All biological resources mitigation, monitoring, and compliance conditions included in the Energy Commissions Final Decision;
- All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
- All mitigation measures identified through consultation with the USFWS;
- All required mitigation measures/avoidance strategies for each sensitive biological resource;
- Required habitat compensation strategy, including provisions for acquisition, enhancement and management, for any temporary and permanent loss of habitat for sensitive biological resources;
- All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction;
- Aerial photographs of all areas to be disturbed during project construction activities - one set prior to site disturbance and one set after completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen;
- Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
- All performance standards and remedial measures to be implemented if performance standards are not met;

- A process for proposing plan modifications to the Energy Commission staff and appropriate agencies for review and approval;

Verification: At least 30 days prior to start of any project-related ground disturbance activities, the project owner shall provide Staff with the final version of the BRMIMP, and the Staff will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved BRMIMP must be made only after consultation with Energy Commission staff, USFWS, and CDFG. The project owner shall notify the Staff five (5) working days before implementing any Staff approved modifications to the BRMIMP.

Within 30 days after completion of project construction, the Applicant shall provide to the Staff for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring plan items are still outstanding.

HABITAT COMPENSATION

BIO-5 To compensate for temporary, permanent, and incremental impacts to sensitive species habitat, the Applicant will provide suitable habitat compensation funds at a ratio to 1:1 for all permanent disturbance and a ratio of 0.5:1 for all temporary disturbance to habitats at an amount of \$2,375.00 per acre-credit and a \$5,000.00 up front fee per transaction.

Verification: To account for inflation and other anticipated changes in habitat compensation costs, the Applicant will consult with KWB and Staff no less than 30 days prior to the start of any project related ground disturbance, and KWB will identify the final cost per acre and total compensation amount. Once the final compensatory mitigation amount has been determined and no less than 30 days prior to the start of any project related ground disturbance activities, the Applicant will provide a Conservation Credit Certificate to the CEC that all habitat compensation funds (including the endowment and transaction fee) have been provided to the KWB.

Within 90 days after completion of project construction, the project owner shall provide aerial photographs to Staff that were taken after construction. The project owner will also provide an analysis of the amount of any additional habitat disturbance than that identified in this staff assessment. Staff will notify the project owner of any additional funds required to compensate for any additional habitat disturbances at the adjusted market value at the time of construction to acquire additional credits if necessary.

REFERENCES

- Avian Power Line Interaction Committee. 1994. Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1994. Edison Electric Institute/Raptor Research Foundation, Washington, D.C. 155 pp.
- CEC (California Energy Commission) 2000. Hanford Energy Park Staff Issue Identification Report. Submitted to the California Energy Commission on August 21, 2000.
- GWF Power Systems Company, Inc. 2000a. Hanford Energy Park – Application for Small Power Plant Exemption. Submitted to the California Energy Commission on May 19, 2000.
- GWF Power Systems Company, Inc. 2000b. Responses to Data Requests. Submitted to the California Energy Commission in August, 2000.
- U.S. Fish & Wildlife Service. 1998. Recovery Plan for upland species of the San Joaquin Valley, California. Region 1, Portland, OR. 319 pp.

CULTURAL RESOURCES

Testimony of Jeanette McKenna

INTRODUCTION

The cultural resources section discusses potential impacts of the proposed Hanford Energy Park (HEP) regarding cultural resources, which are defined as the structural and cultural evidence of the history of human development and life on earth. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts to significant cultural resources, including prehistoric archaeological resources, historic archaeological resources, and ethnographic resources, during project construction, operation and closure. Energy Commission staff designated all of the CEQA checklist items for cultural resources as "less than significant with mitigation incorporation". A brief cultural overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to cultural resources. The section concludes with the staff's proposed monitoring and mitigation measures with respect to cultural resources, with the inclusion of ten conditions of exemption.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Cultural resources are indirectly protected under provisions of the federal Antiquities Act of 1906 (Title 16, United States Code, Section 431 et seq.) and subsequent related legislation, policies, and enacting responsibilities, e.g., federal agency regulations and guidelines for implementation of the Antiquities Act. The following laws, ordinances, regulations, standards, and policies apply to the protection of cultural resources in California. Projects licensed by the Energy Commission are reviewed to ensure compliance with these laws.

STATE

- Public Resources Code, Section 5020.1 defines several terms, including the following:
 - (j) "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript, which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.
 - (q) "substantial adverse change" means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.
- Public Resources Code, Section 5024.1 establishes a California Register of Historical Resources; sets forth criteria to determine significance; defines eligible properties; and lists nomination procedures.
- Public Resources Code, Section 5097.5 states that any unauthorized removal or destruction of archaeological or paleontological resources on sites located on public land is a misdemeanor. As used in this section, "public lands" means lands

owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

- Public Resources Code, Section 5097.98 defines procedures for notification of discovery of Native American artifacts or remains and for the disposition of such materials.
- Public Resources Code, Section 5097.99 prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and sets penalties for these actions.
- Public Resources Code, Section 5097.991 states that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.
- Public Resources code, Section 21000, et seq, California Environmental Quality Act (CEQA) This act requires the analysis of potential environmental impacts of proposed projects and requires application of feasible mitigation measures.
- Public Resources Code, Section 21083.2 states that if a project may affect a resource that has not met the definition of an historical resource set forth in section 21084, then the lead agency may determine whether a project may have a significant effect on “unique” archaeological resources; if so, an EIR shall address these resources. If a potential for damage to unique archaeological resources can be demonstrated, such resources must be avoided; if they can not be avoided mitigation measures shall be required. The law also discusses excavation as mitigation; discussed the costs of mitigation for several types of projects; sets time frames for excavation; defines “unique and non-unique archaeological resources; provides for mitigation of unexpected resources; and sets financial limitations for this section.
- Public Resources Code, Section 21084.1 indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource; the section further defines a “historic resource” and describes what constitutes a “significant” historic resource.
- CEQA guidelines, Title 14, California Code of Regulations, Section 15126.4 “Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects” sub-section (b) discusses impacts of maintenance, repair, stabilization, restoration, conservation, or reconstruction of a historical resource. Subsection (b) also discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.
- CEQA Guidelines, Title 14, California Code of Regulation, Section 15064.5 “Determining the Significance of Impacts to Archaeological and Historical Resources”. Subsection (a) defines the term “historical resources.” Subsection (b) explains when a project may be deemed to have a significant effect on historical resources and defines terms used in describing those situations. Subsection (c) describes the applicability of CEQA to archaeological sites and

provides a bridge between the application of the terms “historical” resources and a “unique” archaeological resource.”

- CEQA Guidelines, Title 14 California Code of Regulations, Section 15064.7 “Thresholds of Significance.” This section encourages agencies to develop thresholds of significance to be used in determining potential impacts and defines the term “cumulatively significant.”
- CEQA Guidelines, Appendix “G” Issue V: Cultural Resources. Lists four questions to be answered in determining the potential for a project to impact archaeological, historic, and paleontologic resources.
- California Penal Code, Section 622.5. Anyone who willfully damages an object or thing of archaeological or historic interest can be found guilty of a misdemeanor.
- California Health and Safety Code, Section 7050.5. If human remains are discovered during construction, the project owner is required to contact the county coroner.
- Public Resources Code, Section 5097.98. If the county coroner determines that the remains are Native American, the coroner is required to contact the Native American Heritage Commission, which is then required to determine the “Most Likely Descendant” to inspect the burial and to make recommendations for treatment or disposition of the remains and any associated burial items.

LOCAL

Kings County General Plan Objective 26.1: Promote the rehabilitation or adaptation to new uses of historic sites and structures.

- a. Policy 26a: List historic sites and structures designated, or proposed for designation, as County landmarks in specific or area plans or local area development guidelines.
- b. Policy 26b: Designate the existing Kings County Museum Advisory Committee, a subcommittee of the Kings County Parks and Recreation Advisory Commission, or its successor to review proposed development which may affect proposed or designated historic sites or County landmarks.
- c. Policy 26c: Refer applications which involve the removal, destruction, or alteration of proposed or designated historic sites or County landmarks to the Kings County Museum Advisory Committee or its successor for recommended mitigation measures.
- d. City of Hanford General Plan: Open Space, Conservation and Recreation Element.

With regard to projects involving environmental review and/or development permits, the Open Space, Conservation and Recreation Element of the City of Hanford General Plan describes a typical condition whereby if potential archaeological sites are discovered, all work in the project shall cease immediately, and a qualified archaeologist shall be retained to evaluate the site and prepare a report.

SETTING

The proposed project would be located four miles south of the City of Hanford in the central San Joaquin Valley. It would be situated south of the slough of the Kings River and just north of historic Tulare Lake on alluvial deposits. The area's climate is characterized as Mediterranean, including hot dry summers and cool moist winters. The proposed project site is composed of agricultural and industrial complexes.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?		X		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c) Disturb any human remains, including those interred outside of formal cemeteries?		X		

DISCUSSION OF IMPACTS

A. Less than significant with mitigation incorporation

1. Several potential historical resources were identified in the project vicinity. They are the remnants of a telegraph line (GWF-1), remnants of an old fence line and the Lakeside Ditch (GWF-3). All identified resources were formally recorded on California Department of Parks and Recreation forms and the route that might have impacted the historic fence alignment was dropped from the project.
2. Evaluation of the identified resources resulted in a determination that the historic telegraph alignment, had been impacted by previous maintenance activities and current fiber cable excavations in the vicinity of the project. Since the initial identification for this project, other non-HEP activities have continued to impact the resource. The lack of integrity of the resource has resulted in a determination that the feature is not a significant resource within the project vicinity.
3. The Lakeside Ditch appears to be a significant resource, representing a ca. 1872-1873 water transportation site currently maintained by the local water district. Although altered and improved throughout the years, the Lakeside Ditch

as a whole is still a significant resource for its association with the regional development of agricultural water transportation. The current project is designed to avoid adverse impacts to this resource and cultural resource monitoring in the vicinity of the Lakeside Ditch will ensure there is no impact to that resource. Therefore, no adverse impacts are expected as a result of the proposed project design. In the event of an unanticipated discovery, the proposed Conditions of Exemption CUL-1 through CUL-15 shall apply.

B. Less than significant with mitigation incorporation

Only one archaeological resource (P-16-000071) has been identified in the project vicinity. In the SPPE application, the applicant concluded that the likelihood of encountering archaeological deposits during construction excavation is relatively low. The applicant has indicated, however, that there is a potential for discovering previously unidentified resources and, therefore, presented recommendations for such occurrences. The cultural resources specialist recommended the following:

“If unanticipated resources are discovered during construction, they will be addressed under the procedures set forth at CEQA Section 15064.5. If possible, the resource will be avoided through design modification, or protective measures as described above. If the resource cannot be avoided, the project archaeologist will consult with the California Energy commission and the SHPO (if there is Federal involvement) with regard to resource significance. If it is determined that the resource is significant, measures to mitigate impacts will be devised in consultation with the CEC (and possibly the SHPO), and will be carried out by the Proponent” (URS, 2000f, p. 19).

In the event of an unanticipated discovery, the proposed Conditions of Exemption CUL-1 through CUL-15 shall apply.

C. Less than significant with mitigation incorporation

There is no record of interred human remains that would be disturbed by the proposed project. In the event that interred human remains are encountered during project construction; the proposed Conditions of Exemption CUL-1 through CUL-15 shall apply.

CUMULATIVE IMPACTS

Staff concludes that there are no cumulative impacts.

CONCLUSIONS

Based on the discussion above, the project will not cause any significant impacts to cultural resources provided the following conditions of exemption are implemented.

PROPOSED CONDITIONS OF EXEMPTION

CUL-1 Prior to the start of ground disturbance (which is defined for this condition and all cultural conditions that follow as any vegetation clearance, project site

preparation, grading, trenching, filling; excavation or augering), the project owner shall provide the California Energy Commission (Energy Commission) Compliance Project Manager (CPM) with the name and statement of qualifications of its Designated Cultural Resource Specialist (DCRS), and an alternate cultural resource specialist, if an alternate is proposed, who would be responsible for implementation of all cultural resources Conditions of Exemption.

Protocol: The statement of qualifications for the DCRS and alternate shall include all information needed to demonstrate that the specialist meets the minimum qualifications specified by the National Park Service, Heritage Preservation Services and shall be qualified by the Register of Professional Archaeologists (RPA). The minimum qualifications include the following:

- a. a graduate degree in anthropology, archaeology, California history, cultural resource management, or a comparable field;
- b. at least three years of archaeological resource mitigation and field experience in California; and
- c. at least one year's experience in each of the following areas:
 1. leading archaeological resource field surveys;
 2. leading site and artifact mapping, recording, and recovery operations;
 3. marshalling and use of equipment necessary for cultural resource recovery and testing;
 4. preparing recovered materials for analysis and identification;
 5. determining the need for appropriate sampling and/or testing in the field and in the lab;
 6. directing the analyses of mapped and recovered artifacts;
 7. completing the identification and inventory of recovered cultural resource materials; and
 8. preparing appropriate reports to be filed with the receiving curation repository, the State Historic Preservation Officer (SHPO), and the appropriate regional archaeological information center(s).

The statement of qualifications for the DCRS shall include:

- a. a list of specific projects the specialist has previously worked on;
- b. the role and responsibilities of the specialist for each project listed; and
- c. The names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

The DCRS and alternate shall be retained to conduct monitoring of ground disturbance/construction in the vicinity of the Lakeside Ditch. The DCRS and alternate shall also be retained on an on-call basis with the understanding that they will respond within 24 hours in the event an unanticipated cultural resource is

discovered or there is a possibility that a cultural resource may be impacted in an unanticipated manner.

Verification: At least 45 days prior to the start of ground disturbance, the project owner shall submit the name and statement of qualifications of its DCRS and alternate to the CPM for review and approval.

At least ten days, prior to the start of any ground disturbance, the project owner shall confirm in writing to the CPM that the approved DCRS will be available at the start date and is prepared to implement the cultural resource Conditions of Exemption.

At least ten days prior to the termination or release of a DCRS, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and a statement of qualifications of the proposed new DCRS.

CUL-2 Prior to the start of ground disturbance, the project owner shall provide the DCRS and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps provided will include the USGS 7.5 minute topographic quadrangle map and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. If the DCRS enlargements or strip maps for linear facility routes, the project owner shall provide them. In addition, the project owner shall provide a set of these maps to the CPM at the same time that they are provided to the specialist. If the footprint of the power plant or linear facilities changes, the project owner shall provide maps and drawings reflecting these changes, to the cultural resources specialist and the CPM within five days. Maps shall show the location of all areas where surface disturbance may be associated with project-related access roads, and any other project components.

Verification: At least 40 days prior to the start of ground disturbance on the project, the project owner shall provide the DCRS and the CPM with the maps and drawings. Copies of maps or drawings reflecting changes to the footprint of the power plant and/or linear facilities shall be submitted to the cultural resources specialist and the CPM within five days of the changes.

CUL-3 Prior to the start of ground disturbance, the DCRS shall prepare, and the project owner shall submit to the CPM for review and approval, a Cultural Resources Monitoring and Mitigation Plan (CRMMP), identifying general and specific measures to minimize potential impacts to the Lakeside Ditch and procedures to be followed in the event of an unanticipated discovery.

Protocol: The CRMMP shall include, but not be limited to, the following elements and measures.

- a. Identification of the person(s) expected to perform monitoring tasks; a description of each team member's qualifications and their

responsibilities; and the reporting relationships between project construction management and the mitigation and monitoring team.

- b. A discussion of the inclusion of Native American observers or monitors, in the event of an unanticipated discovery, the procedures to be used to select them, and their role and responsibilities.
- c. A discussion of any measures such as flagging or fencing, to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during construction and/or operation, and identification of areas where these measures are to be implemented. The discussion shall address how these measures will be implemented prior to the start of construction and how long the measures will be needed to protect the resources from project-related effects.
- d. A discussion of the location(s) where monitoring of project construction activities is deemed necessary by the DCRS. The specialist will determine the size or extent of the areas where monitoring is to occur and will establish the percentage of the time that the monitor(s) will be present. However monitoring shall be conducted full time during ground disturbance in the vicinity of Lakeside Ditch to ensure there is no impact to this historic resource.
- e. A discussion of the requirement that all cultural resources encountered will be recorded and mapped (may include photos) and that all significant or diagnostic resources will be collected for analysis and eventual curation into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Title 36 of the Federal Code of Regulations, Part 79.
- f. A discussion of the availability and the designated specialist's access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials encountered during construction.
- g. Identification of the public institution that has agreed to receive any data and cultural resources recovered during monitoring and mitigation work. Discussion of any requirements, specifications, or funding needed for curation of the materials to be delivered for curation and how they will be met. Also the name and phone number of the contact person at the institution shall be included.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the CRMMP, prepared by the DCRS, to the CPM for review and approval.

CUL-4 Prior to the start of ground disturbance, the DCRS shall prepare an employee training plan. The project owner shall submit the cultural resources training plan and any training components to the CPM for review and approval. If use of a video is anticipated as a component of the training

program, a copy of the script of the video shall be submitted to the CPM for review and approval.

Protocol: The training plan and all program components shall discuss the potential to encounter cultural resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training program shall include a lecture and/or video that addresses the following: (1) applicable state and federal laws pertaining to cultural resources, (2) samples of cultural materials that, upon discovery, will require notification of the construction supervisor, cultural resources monitor, and/or DCRS; (3) the authority of the DCRS, alternate or monitor(s) to halt or redirect construction activities that have the potential to affect cultural resources.

The training plan shall also include the set of resource reporting procedures and work curtailment procedures that workers are to follow if previously unknown cultural resources are encountered during project activities. The training plan shall include the statement that the DCRS, alternate or monitor has the authority to halt construction in the event of an unanticipated discovery.

The training program shall be presented by the DCRS or qualified member of the cultural resources team(s) approved by the CPM and may be combined with other training programs prepared for biological resources, paleontologic resources, hazardous materials, or any other areas of interest or concern.

If the video is shown in lieu of a presentation by a trainer, a member of the cultural resource team (DCRS, alternate or monitor) shall be present to answer questions.

The employees shall be given a small durable environmental awareness training manual that includes relevant legal and procedural information necessary to fulfill the conditions of certification and telephone numbers of the DCRS and alternate cultural resource specialist.

A form shall be developed for the signature of trainees who have completed training. The form shall certify the following: (1) completion of the environmental awareness training program, (2) understanding of responsibilities under the program and (3) comprehension of potential legal penalties that could be imposed if applicable laws are violated.

Verification: At least 30 days prior to the start of ground disturbance; the project owner shall submit to the CPM for review and approval, the proposed employee training plan and video script, if a video is proposed. The project owner shall provide the name and resume of the individual(s) performing the training.

CUL-5 Prior to the start of ground disturbance, and throughout the project construction period as needed for all new employees, the project owner shall ensure that the designated cultural resource trainer(s) provide(s) the CPM-approved cultural resources training to all project managers, construction supervisors, and workers. The project owner shall ensure that the designated trainer provides the workers with the CPM-approved set of procedures for reporting any sensitive resources that may be discovered during ground disturbance and the work curtailment procedures that the workers are to follow if previously unknown cultural resources are encountered during construction.

Training at the project site may be discontinued after all foundations at the site are completed and the DCRS has inspected the site and determined that no cultural resources will be impacted. Training shall continue for project personnel working in the vicinity of all project linears.

Verification: In each Monthly Compliance Report, after the start of construction, the project owner shall provide the CPM with documentation that the designated cultural resource trainer(s) has/have provided to all project managers, construction supervisors, and workers in the month to which the report applies, the CPM-approved cultural resources training and the set of resource reporting and work curtailment procedures.

After installation of all foundations at the project site, if the project owner wishes to discontinue training at the project site, the project owner shall provide a letter to the CPM indicating that the DCRS has inspected the project site and has not observed any cultural resources that may be impacted by the project.

CUL-6 The DCRS, alternate or the monitor(s) shall have the authority to halt or redirect construction if previously unknown cultural resource sites or materials are encountered or if known resources may be impacted in a previously unanticipated manner.

If such resources are found, the halting or redirection of construction shall remain in effect until:

- a. The specialist has notified the CPM and the project owner of the find and the work stoppage;
- b. The specialist, the project owner, and the CPM have conferred and determined what, if any, data recovery or other mitigation is needed; and
- c. Any necessary data recovery and mitigation has been completed.

The specialist, the project owner, and the CPM shall confer within five working days of the notification of the CPM to determine what, if any, determination of significance, data recovery or other mitigation is needed. If data recovery or other mitigation measures are required, the specialist and team members shall monitor construction activities and implement data recovery and mitigation measures, as needed.

If unearthed cultural resources appear to be Native American in origin, a monitor who traces ancestry to the affected area shall be added to the cultural resource team. The Native American monitor shall be present during any monitoring of cultural resources, which appear to be Native American in origin.

Representatives of the Santa Rosa Rancheria shall be informed of any cultural resource discoveries that may be Native American in origin.

All required data recovery and mitigation shall be completed expeditiously unless all parties agree to additional time.

Verification: At least ten days prior to the start of ground disturbance, the project owner shall provide the CPM with a letter confirming that the DCRS, alternate and monitor(s) have the authority to halt construction activities in the vicinity of a cultural resource find.

For any cultural resource encountered, the project owner shall notify the CPM within 24 hours after the find.

Within seven days of obtaining a Native American monitor and notifying the Santa Rosa Rancheria concerning a discovery, the project owner shall notify the CPM by letter that the monitor has been obtained and the Rancheria has been notified.

CUL-7 Prior to the start of ground disturbance, and each week throughout project construction, the project owner shall provide the DCRS with a current schedule of anticipated project activity in the following month and a map indicating the area(s) where the construction activities will occur. The DCRS shall consult daily with the project superintendent or construction field manager to confirm the area(s) to be worked on the next day(s).

Verification: Ten days prior to the start of ground disturbance, and in each Monthly Compliance Report thereafter, the project owner shall provide the CPM with a copy of each weekly schedule of the construction activities. The project owner shall notify the CPM when all ground disturbing activities, including landscaping, are completed.

CUL-8 Throughout monitoring and mitigation phases of the project, the DCRS, alternate and monitor(s) shall keep a daily log of any resource finds and the progress or status of the resource monitoring, mitigation, preparation, identification, and analytical work being conducted for the project. The daily logs shall indicate by tenths of a post mile, where and when monitoring has taken place, where monitoring has been deemed unnecessary, and where cultural resources were found.

The DCRS shall prepare a weekly summary of the daily logs on the progress or status of cultural resource-related activities.

The DCRS and monitor(s) may informally discuss the cultural resource monitoring and mitigation activities with Energy Commission technical staff.

Verification: Throughout the project construction period, the project owner shall ensure that the daily log(s) and the weekly summary reports prepared by the DCRS and monitor(s) are available for periodic audit by the CPM.

CUL-9 The DCRS, alternate or monitor(s) shall be present at times the specialist deems appropriate to monitor ground disturbance.

Cultural resource monitoring shall be conducted full time in the vicinity of the Lakeside Ditch.

Protocol: If the DCRS determines that monitoring is necessary in certain portions of the project area or along portions of the linear facility routes, the designated specialist shall notify the project owner and the CPM of the planned monitoring. The DCRS shall use milepost markers and boundary stakes placed by the project owner to identify areas where monitoring is being activated and deemed necessary.

Verification: Throughout the project construction period the project owner shall include in the Monthly Compliance Reports to the CPM copies of the weekly summary reports prepared by the DCRS regarding cultural resource monitoring.

CUL-10 The project owner shall ensure that the DCRS performs the recovery, preparation for analysis, analysis, preparation for curation, and delivery for curation of all cultural resource materials encountered and collected during pre-construction surveys and during the monitoring, data recovery, mapping, and mitigation activities related to the project.

Verification: The project owner shall maintain in its compliance files, copies of signed contracts or agreements with the museum(s), university (ies), or other appropriate research specialists. The project owner shall maintain these files for the life of the project and the files shall be kept available for periodic audit by the CPM. Information as to the specific location of sensitive cultural resource site shall be kept confidential and accessible only to qualified cultural resource specialists.

CUL-11 Following completion of data recovery and site mitigation work, the project owner shall ensure that the DCRS prepares a proposed scope of work for the Cultural Resources Report (CRR). The project owner shall submit the proposed scope of work to the CPM for review and approval.

Protocol: The proposed scope of work shall include (but not be limited to):

- a. discussion of any analysis to be conducted on recovered cultural resource materials;

- b. discussion of possible results and findings;
- c. proposed research questions which may be answered or raised by analysis of the data recovered from the project; and
- d. an estimate of the time needed to complete the analysis of recovered cultural resource materials and to prepare the CRR.

Verification: The project owner shall ensure that the DCRS prepares the proposed scope of work within 90 days following completion of the data recovery and site mitigation work. Within seven days after completion of the proposed scope of work, the project owner shall submit it to the CPM for review and approval.

CUL-12 The project owner shall ensure that the DCRS prepares a CRR. The project owner shall submit the report to the CPM for review and approval.

Protocol: The CRR shall include (but not be limited to) the following:

- a. For all projects:
 - 1. description of pre-project literature search, surveys, and any testing activities;
 - 2. maps showing areas surveyed or tested;
 - 3. description of any monitoring activities;
 - 4. maps, including maps using a 7.5 minute USGS topographic base, of any areas monitored; and
 - 5. conclusions and recommendations.
- b. For projects in which cultural resources were encountered, include the items specified under “a” and also provide:
 - 1. site and isolate records and maps;
 - 2. description of testing for, and determinations of, significance and potential eligibility; and
 - 3. a discussion of the research questions answered or raised by the data from the project.
- c. For projects regarding which cultural resources were recovered, include the items specified under “a” and “b” and also provide:
 - 1. a description of the methods employed in the field and laboratory; a description (including drawings and/or photos) of recovered cultural materials;
 - 2. results and findings of any special analyses conducted on recovered cultural resource materials;
 - 3. an inventory list of recovered cultural resource materials; an interpretation of the site(s) with regard to the research design; and

4. the name and location of the public repository receiving the recovered cultural resources for curation.

Verification: The project owner shall ensure that the DCRS completes the CRR within 90 days following completion of the analysis of the recovered cultural materials. Within seven days after completion of the report, the project owner shall submit the CRR to the CPM for review and approval.

CUL-13 The project owner shall submit an original, an original-quality copy, and a computer disc copy (or other format to meet the repository's requirements), of the CPM-approved CRR to the public repository to receive the recovered data and materials for curation, with copies to the State Historic Preservation Officer (SHPO), the appropriate regional archaeological information center(s). If the report is submitted to any of these entities on a computer disc, the disc files must meet SHPO requirements for format and content.

Protocol: The copies of the CRR to be sent to the entities specified above shall include the following (based on the applicable scenario [a, b, or c] set forth in condition Cul-12):

- a. originals or original-quality copies of all text;
- b. originals of any topographic maps showing site and resource locations;
- c. originals or original-quality copies of drawings of significant or diagnostic cultural resource materials found during pre-construction surveys or during project monitoring and mitigation and subjected to post-recovery analysis and evaluation.
- d. photographs of any cultural resource site(s) and the various cultural resource materials recovered during project monitoring and mitigation and subjected to post-recovery analysis and evaluation. The project owner shall provide the curation repository with a set of negatives for all of the photographs.

Verification: Within 30 days after receiving approval of the CRR, the project owner shall provide to the CPM documentation that the report has been sent to the public repository receiving the recovered data and materials for curation, the SHPO and the appropriate archaeological information center(s).

For the life of the project the project owner shall maintain in its compliance files copies of all documentation related to the filing of the CPM-approved CRR with the public repository receiving the recovered data and materials for curation.

CUL-14 Following the filing of the CPM-approved CRR with the appropriate entities, specified in condition CUL-13, the project owner shall ensure that all cultural resource materials, maps, and data collected during data recovery and mitigation for the project are delivered to a public repository that meets the US Secretary of Interior requirements for the curation of cultural

resources. The project owner shall pay any fees for curation required by the repository.

Verification: The project owner shall ensure that all recovered cultural resource materials are delivered for curation within 30 days after providing the CPM-approved CRR to the entities specified in CUL-13.

For the life of the project the project owner shall maintain in its compliance files, copies of signed contracts or agreements with the public repository to which the project owner has delivered for curation all cultural resource materials collected during data recovery and mitigation for the project.

CUL-15 Prior to initial project site mobilization (i.e., placing a trailer on the site with accompanying equipment, utilities and grading) the project owner must comply with Cul-1, Cul-2 and Cul-4 and complete Cul-5 as it pertains to management, supervisors and workers involved in this undertaking. The project owner shall comply with and Cul-3 for the entire project, but this need not be accomplished before the trailer is placed. If cultural resources are discovered, all cultural conditions shall apply.

Prior to the initial site mobilization, the designated cultural resource specialist shall examine the area of initial project site mobilization and ensure that there are no cultural resources that may require protection or mitigation.

Verification: At least seven days prior to engaging in the initial project site mobilization defined in this condition, the project owner shall provide the CPM with information authored by the designated cultural resource specialist identifying the area of initial site mobilization. The cultural resource specialist shall indicate the method(s), procedure(s) and date(s) the cultural resource inspection was performed and an explanation of the anticipated project activities. The document will be reviewed and approved by the CPM.

REFERENCES

GWF Power Systems Company, Inc. 2000a. Hanford Energy Park Application for Small Power Plant Exemption. Submitted to the California Energy Commission on May 31, 2000a.

URS (URS Corporation). 2000f. Cultural Resources Technical Report (Confidential). Submitted to the California Energy Commission on May 31, 2000.

ENERGY RESOURCES

Testimony of Steve Baker

INTRODUCTION

The Energy Resources section examines energy use by the Hanford Energy Park (HEP) to ensure that the HEP's consumption of energy will not result in significant adverse impacts on the environment. To accomplish this, staff addresses the issue of inefficient and unnecessary consumption of energy by:

- determining whether the facility will likely present any adverse impacts upon energy resources; and
- determining whether these adverse impacts are significant.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

No federal laws apply to the efficiency of this project.

STATE

CALIFORNIA ENVIRONMENTAL QUALITY ACT GUIDELINES

CEQA Guidelines state that the environmental analysis "...shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4(a)(1)). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient and unnecessary consumption of energy (Cal. Code Regs., tit. 14, § 15000 et seq., Appendix F).

WARREN-ALQUIST ACT

The Warren-Alquist Act requires the submittal to the Energy Commission of an NOI prior to filing an Application for Certification (AFC) (Pub. Resources Code, § 25502). The AFC process commonly takes twelve months. Exemption from that process is allowed for certain projects, HEP qualifies for exemption from the NOI process through § 25540.6(a)(4), and thus qualifies for a 6 month Small Power Plant Exemption relieving the HEP from the 12 month AFC Process.

LOCAL

No local or county ordinances apply to power plant efficiency.

SETTING

GWF Power Systems Company, Inc. (GWF) proposes to construct and operate a (nominal) 98.7 MW combined cycle cogeneration power plant to generate baseload power, selling directly to customers through bilateral contracts or on the spot market, while supplying up to 284,500 pounds per hour of cogeneration steam to existing and future customers (GWF 2000a, SPPE §§ 1.1, 1.2, 1.6, 2.2.3, 2.2.4.2, 2.2.16, 2.4.1). (Note that this nominal rating is based upon preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and may exceed, this figure. Nevertheless, the project's generating capacity will be less than 100 MW (CEC 2000a). The HEP will consist of a 67.6 MW General Electric Frame 6FA combustion turbine generator with evaporative inlet air cooler, a dual pressure heat recovery steam generator (HRSG) with duct burner, and a 34.4 MW ABB Alstom VAX condensing steam turbine generator, totaling approximately 98.7 MW net. The gas turbine and HRSG will be equipped with dry low-NOx combustors and selective catalytic reduction to control air emissions (GWF 2000a, SPPE §§ 1.1, 1.5.2, 2.2.2, 2.2.4.1, 2.2.4.2).

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
c) Result in inefficient or wasteful use of energy resources?			X	

DISCUSSION OF IMPACTS

C. LESS THAN SIGNIFICANT IMPACT

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. " (Cal. Code Regs., tit. 14, § 15126.4(a)(1)), (Cal. Code regs., tit. 14, § 15000 et seq., Appendix F). An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient and unnecessary consumption of fuel or energy.

ENERGY REQUIREMENTS

Any power plant large enough to fall under Energy Commission siting jurisdiction will consume large amounts of energy. The HEP will burn natural gas at a nominal rate up to 24.1 billion Btu per day LHV¹ (GWF 2000a, SPPE Table 2.2-1; § 2.5). This is a substantial rate of energy consumption, and holds the potential to impact energy supplies.

ENERGY USE EFFICIENCY

Under expected project conditions, electricity will be generated at a full load efficiency of approximately 49.5 percent LHV with no cogeneration steam delivery to the cogeneration host (GWF 2000b, Efficiency Data Response 3); compare this to the average fuel efficiency of a typical utility company baseload power plant at approximately 35 percent LHV. When maximum cogeneration steam is delivered, electrical generation efficiency drops to 36.7 percent, but overall cogeneration efficiency (electric plus heat) equals 65.4 percent. These figures represent an efficient plant, typical of state-of-the-art equipment.

ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES

The applicant has described its sources of supply of natural gas for the HEP (GWF 2000a, SPPE §§ 1.5.2, 1.5.5, 2.1, 2.2.6, 2.4.3, 7.0, 7.1). The project will burn natural gas from the existing Southern California Gas Company (SoCalGas) Line 400 transmission pipeline in Hanford. The gas supply infrastructure is extensive, offering access to vast reserves of gas from the Rocky Mountains, Canada, Texas and the Southwest. This source represents far more gas than would be required for a project this size. Energy Commission predictions are that natural gas supplies will be adequate for many years into the future. It is therefore highly unlikely that the HEP could pose a substantial increase in demand for natural gas in California.

ADDITIONAL ENERGY SUPPLY REQUIREMENTS

Natural gas fuel will be supplied to the project by a new 2.8-mile long 16-inch diameter pipeline connecting with the existing SoCalGas Line 400 along Hanford-Armona Road (GWF 2000a, SPPE §§ 1.5.2, 1.5.5, 2.1, 2.2.6, 7.0, 7.1). This line should provide adequate access to natural gas fuel. There is no real likelihood that the HEP will require the development of additional energy supply capacity.

COMPLIANCE WITH ENERGY STANDARDS

No standards apply to the efficiency of the HEP.

ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT AND UNNECESSARY ENERGY CONSUMPTION

The HEP could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient or

¹ Lower heating value.

unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

PROJECT CONFIGURATION

The HEP will be configured as a combined cycle power plant, in which electricity is generated by a gas turbine, and additionally by a steam turbine that operates on heat energy recuperated from the gas turbine's exhaust (GWF 2000a, SPPE §§ 1.1, 1.5.2, 2.1, 2.2.2, 2.2.4). By recovering this heat, which would otherwise be lost up the exhaust stack, the efficiency of any combined cycle power plant is increased considerably from that of either a gas turbine or steam turbine operating alone. Such a configuration is well suited to the large, steady loads met by a baseload plant, intended to supply energy efficiently for long periods of time.

Additionally, the HEP will be configured as a cogeneration power plant. A portion of the steam created in the HRSG from gas turbine exhaust heat will be piped to host facilities that employ this heat energy in industrial processes. Utilization of this otherwise wasted heat displaces the boiler or other heat source that would otherwise be required by the host facility, yielding combined efficiency of the power plant and host facility greater than either operating separately.

EQUIPMENT SELECTION

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The F-class gas turbine to be employed in the HEP represents one of the most modern and efficient such machines now available. The applicant will employ a General Electric Frame 6FA combined cycle power train (GWF 2000a, SPPE §§ 1.3, 2.1, 2.2.1, 2.2.3.3). In a one-on-one configuration with a reheat steam turbine generator, this machine is nominally rated at 107 MW and 53.0 percent efficiency LHV at ISO² conditions (GTW 1999b). (Note that both generating capacity and maximum efficiency will be slightly lower for the HEP due to its non-reheat steam turbine, more suited to cogeneration use.)

One possible alternative machine is the ABB Alstom Power KA 10C-2, nominally rated at 83.6 MW and 51.8 percent efficiency at ISO conditions in a one-on-one combined cycle configuration (GTW 1999b).

Another alternative is the Siemens-Westinghouse W251B, nominally rated in a one-on-one combined cycle at 71.5 MW and 47.8 percent efficiency LHV at ISO conditions.

The GE turbine selected promises slightly higher fuel efficiency (53.0 percent at ISO conditions) (GTW 1999b) than the other machines. Any differences among the three in actual operating efficiency will be relatively insignificant. Selecting among

² International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

these machines is based partly on other factors, such as generating capacity, cost, and ability to meet air pollution limitations.

EFFICIENCY OF ALTERNATIVES TO THE PROJECT

The project objectives involve generating baseload power for sale on the spot market or via bilateral contracts while selling cogeneration steam to host facilities (GWF 2000a, SPPE §§ 1.1, 1.2, 1.6, 2.2.2, 2.2.3, 2.2.16, 2.4.1).

Alternative Generating Technologies

The applicant addresses alternative generating technologies in its application (GWF 2000a, SPPE § 5.3). Distillate oil-, crude oil-, produced gas-, petroleum coke- and coal-burning technologies are all considered. Given the project objectives, location and air pollution control requirements, staff agrees with the applicant that only natural gas-burning technologies are feasible.

Natural Gas-Burning Technologies

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel efficient machinery.

Capital cost is also important in selecting generating machinery. Recent progress in the development of large, stationary gas turbines, aided by the incorporation into these machines of technological advances made in the development of aircraft (jet) engines, has created a situation in which several large manufacturers compete vigorously to sell their machines. This, combined with the cost advantages of assembly-line manufacturing, has driven down the prices of these machines. Thus, the power plant developer can purchase a turbine generator that not only offers the lowest available fuel costs, but at the same time sells for the lowest per-kilowatt capital cost. It is therefore to be expected that GWF has chosen one of the most efficient generating technologies available.

A further choice of alternatives involves the selection of gas turbine inlet air cooling methods. The two commonly used techniques are the evaporative cooler and the chiller; both devices increase power output by cooling the gas turbine inlet air. A mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but necessitates the use of a substantial inventory of ammonia. An evaporative cooler boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding slightly higher operating efficiency. The difference in efficiency among these techniques is relatively insignificant.

GWF proposes to employ evaporative cooling (GWF 2000a, SPPE §§ 1.5.2, 2.2.4.1). Given the climate at the project site and the relative lack of clear

superiority of one system over the other, staff agrees that the applicant's approach will yield no significant adverse energy impacts.

In conclusion, the project configuration (combined cycle cogeneration) and generating equipment (F-class gas turbine) chosen appear to represent the most efficient feasible combination to satisfy the project objectives. There are no alternatives that could significantly reduce energy consumption.

CUMULATIVE IMPACTS

Staff concludes that there are no cumulative impacts.

CONCLUSIONS

The HEP, if constructed and operated as proposed, would generate 98.7 MW of electric power at an overall project fuel efficiency around 49.5 percent with no cogeneration steam going to the host facilities. With maximum cogeneration steam export, electric generating efficiency will drop to approximately 36.7 percent, but overall (cogeneration) efficiency will be around 65.4 percent. While it will consume substantial amounts of energy, the HEP will do so in the most efficient manner practicable. It will not create significant adverse effects on energy supplies or resources, will not require additional sources of energy supply, and will not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the HEP would present no significant adverse impacts upon energy resources.

PROPOSED CONDITIONS OF EXEMPTION

No Conditions of Exemption are proposed.

REFERENCES

- CEC (California Energy Commission). 2000 a. Memorandum, "Hanford Generating Capacity and Efficiency," to Rick Buell, CEC project manager, from Steve Baker, CEC staff, dated July 28, 2000.
- GTW (Gas Turbine World). 1999 a. *Gas Turbine World*, November/December 1999, page 42.
- GTW (Gas Turbine World). 1999 b. *Gas Turbine World 1999-2000 Performance Specs*, volume 19. December 1999.
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GENERAL CONDITIONS OF EXEMPTION

Testimony of Bob Eller

The Hanford Energy Park Project Compliance Plan has been established as required by Section 21081.6 of the Public Resources Code. The plan provides a means for assuring that the facility is constructed and operated in compliance with air and water quality, public health and safety, other applicable regulations, and the conditions contained in staff's analysis of the Hanford Energy Park application for a Small Power Plant Exemption (SPPE).

The Compliance Plan is divided into two sections:

1. Compliance general conditions which specify the framework for record keeping and reporting throughout the construction and operation phases of the project; and,
2. Conditions of exemption which contain measures that must be taken to mitigate any and all potential adverse project impacts to an insignificant level.

The compliance general conditions are presented below. The conditions of exemption for each technical area are presented in each technical section.

Each condition of exemption has a verification statement describing the means by which compliance with the condition can be verified. The Compliance Project Manager may modify the verification procedures as necessary to ensure compliance with the adopted conditions of exemption. Verification of compliance with the conditions will also be accomplished by periodic reports filed by GWF Power Systems Company, Inc., as required by the general conditions, auditing of project records, and by staff inspections of the power plant site and related facilities.

COMPLIANCE GENERAL CONDITIONS

I. COMPLIANCE PROJECT MANAGER

A Compliance Project Manager (CPM) will be designated to oversee compliance with the general compliance conditions and conditions of exemption. The assigned CPM, after consultation with the appropriate technical staff, and approval of CEC management and responsible agencies, shall:

1. Ensure that compliance files are established and maintained for the Hanford Energy Park project;
2. Track compliance filings;
3. Ensure the timely processing of proposed changes to the Commission Decision;
4. Use all available means to encourage the resolution of disputes; and,
5. Coordinate compliance monitoring activities of Commission and delegate agency staff.

II. LICENSEE RESPONSIBILITY

It shall be the responsibility of the project's owners and operators, GWF Power Systems Company, Inc., to ensure that the compliance general conditions and the conditions of exemption are satisfied. The GWF Power Systems Company, Inc. must comply with the conditions of exemption and compliance general conditions. Failure to comply with any of the conditions of exemption or the compliance general conditions may result in reopening of the case and revocation of the SPPE, or other action as appropriate.

At such time as GWF Power Systems Company, Inc., believes that all conditions of exemption have been satisfied, they shall notify the CEC CPM in writing. It shall be the responsibility of the CEC CPM to verify that the conditions have been satisfied and to provide GWF Power Systems Company, Inc., a letter acknowledging that the conditions of exemption have been satisfied.

Following satisfactory completion of the conditions of exemption, GWF Power Systems Company, Inc., must continue to submit any reports required by specific conditions of exemption to the CEC CPM for the period defined in the condition.

GWF Power Systems Company, Inc., shall send all verification submittals to the CEC CPM whether such condition was satisfied or work performed by GWF Power Systems Company, Inc., or other agent, and whether or not such verification was also submitted to the CEC CPM by an agent.

III. COMPLIANCE RECORD

GWF Power Systems Company, Inc. shall maintain, for the life of the project, files of all condition of exemption and compliance general condition related correspondence and final as-built drawings.

The Commission shall maintain as a public record:

1. All documents received regarding compliance with the compliance general conditions and conditions of exemption;
2. All complaints filed with the Commission; and
3. All petitions for changes to conditions and documentation of the resulting staff or Commission action taken.

IV. COMPLIANCE SUBMITTALS

All compliance submittals and correspondence pertaining to compliance matters shall include a cover letter with a description of the submittal and a reference to the compliance general condition and/or the condition of exemption number(s) which the submittal is intended to satisfy. Compliance submittals shall be addressed as follows:

California Energy Commission
1516 Ninth Street (MS-2000)
P.O. Box 944295
Sacramento, CA 94244-2950

V. COMPLIANCE REPORTS

GWF Power Systems Company, Inc., must submit Monthly Compliance Reports to the CEC CPM during the construction phase of the cogeneration project or until such time that the CEC CPM informs GWF Power Systems Company, Inc., in writing, that all construction phase Conditions of Exemption have been satisfied.

Thereafter, GWF Power Systems Company, Inc. shall submit annual compliance reports within 45 days after the end of each calendar year (by February 15).

At a minimum, the Compliance Reports shall contain:

1. A written summary of the current project status;
2. Any submittal required by a specific condition of exemption;
3. A statement of how and when GWF Power Systems Company, Inc., intends to satisfy those conditions of exemption not yet completed but which GWF Power Systems Company, Inc., had expected to satisfy during the reporting period;
4. A listing of conditions of exemption that are expected to be completed during the next reporting period;
5. A listing of all changes to the conditions of exemption or means of verification which have been agreed to by GWF Power Systems Company, Inc., and the CEC CPM; and,
6. A matrix listing all conditions of exemption by technical area and number to include: a short description of what the condition requires, identification of next product due and the anticipated date of submittal, anticipated date of condition satisfaction, and status (i.e. completed, not started, or in progress).

After the first Annual Compliance Report, GWF Power Systems Company, Inc., may request the discontinuance of items 3 through 6 above. The CEC CPM will evaluate, and may approve, GWF Power Systems Company, Inc.'s, request if circumstances warrant.

VI. CONFIDENTIAL INFORMATION

Any information which GWF Power Systems Company, Inc., deems proprietary shall be submitted to the Commission Docket Unit (Mail Stop 4) to be processed pursuant to California Code of Regulations Title 20 section 2505(a). Any information which is determined to be confidential shall be kept confidential as provided for in CCR Title 20 section 2501 et seq. Information deemed not to be confidential will become public information.

VII. ACCESS

The CEC CPM, or other designated CEC staff or agent, shall be guaranteed and granted access at any time to the project site, transmission line right-of-way, and related sites to conduct audits, inspections, surveys, or general site visits.

GEOLOGY AND SOILS, MINERAL RESOURCES, AND PALEONTOLOGY

Testimony of Robert Anderson

INTRODUCTION

The geology and paleontology section discusses potential impacts of the proposed Hanford Energy Park (HEP) regarding geological hazards, geological (including mineralogical) and paleontological resources, and soils. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts to significant geological and paleontological resources and surface water hydrology during project construction, operation and closure. All of the CEQA checklist items for geology and paleontology were designated by Energy Commission staff as "no impact." A brief geological and paleontological overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to geological hazards and resources, paleontological resources, and soils. The section concludes with the staff's proposed monitoring and mitigation measures with respect to geological hazards, geological and paleontological resources, and soils, with the inclusion of nine conditions of exemption.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

The applicable LORS are listed in the AFC, in Sections 8.14, 8.15, and 8.16 (GWF 2000a). A brief description of the LORS for geological hazards and resources, soils and paleontological resources follows:

FEDERAL

There are no federal LORS for geological hazards and resources, grading or paleontological resources for the proposed project.

STATE AND LOCAL

The California Building Code (CBC) 1998 edition is based upon the Uniform Building Code (UBC), 1997 edition, which was published by the International Conference of Building Officials. The CBC is a series of standards that are used in the investigation, design (Chapters 16 and 18) and construction (including grading and erosion control as found in Appendix Chapter 33). The CBC supplements the UBC's grading and construction ordinances and regulations.

The California Environmental Quality Act (CEQA) Guidelines Appendix G provides a checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts.

- Section (V) (c) asks if the project will directly or indirectly destroy a unique paleontological resource or site or unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) pose questions that are focused on whether or not the project would expose persons or structures to geological hazards.

- Sections (X) (a) and (b) pose questions about the project's effect on mineral resources.

The Standard Procedures, Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources (SVP 1994) are a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. They were adopted in October 1994 by a national organization of vertebrate paleontologists (the Society of Vertebrate Paleontologists).

SETTING

SITE GEOLOGY

The proposed 10-acre power plant expansion site is located in the Tulare Lake Basin in the San Joaquin Valley, one of two principal units making up the Great Valley physiographic province. The site is overlain in alluvium, made up of poorly bedded unconsolidated sands, silty sands, silt and clay. The alluvium overlies a unit of older (quaternary age) alluvium that is also made up of unconsolidated gravel, sand, and silty sand. The younger alluvium is overlain by surface soils at the site, which include the Kimberlina fine sandy loam and the Cajon sandy loam. No known faults occur at the site.

Five soil types are crossed by proposed linear facilities. The soils crossed by the linear facilities or underlying the project site include the Kimberlina fine sandy loam, the Kimberlina saline-alkali Graces complex, the Cajon sandy loam, the Nord fine sandy loam, and the Nord Complex. The Kimberlina fine sandy loam soil type contains a high concentration of salts, is alkaline, corrosive, and only slightly susceptible to erosion by water (USDA 1986). The Kimberlina saline-alkali Graces complex differs from the Kimberlina fine sandy loam by the lower permeability of the Graces soils than those of the Kimberlina fine sandy loam. Both soil types can be locally intermixed. The Cajon sandy loam contains a high concentration of salts, is alkaline, corrosive, and slightly susceptible to erosion by water. The Nord fine sandy loam is well drained soil with a slightly higher permeability than the Kimberlina fine sandy loam. The Nord Complex soil is a cross between the Nord fine sandy loam and the Nord fine sandy loam saline alkaline complex. The former soil type is well suited for utility construction, while the latter soil is somewhat corrosive. None of the soil types encountered at the project site and along the linear facility alignments are likely to present significant challenges with respect to construction. None of the soil types encountered at the project site and along the linear facility alignments are moderately to highly erosive. The HEP site and construction laydown area are not currently used for agriculture, nor have they been within the past six years. Approximately 3 to 5 acres of surface soils will be disturbed during construction of the project.

The proposed natural gas pipeline and transmission line routes will result in the disturbance of approximately 10-25 acres. The erosion hazard for the soils along the transmission line route is considered slight, although construction activities may

expose materials that may be susceptible to wind and water erosion. These areas will be revegetated or covered with synthetic mats.

After grading and compacting, the soils excavated from the HEP site will be revegetated or covered with a synthetic mat as necessary to reduce the potential for wind and water erosion. A storm water pollution prevention plan (SWPPP) will be required from the Applicant prior to construction. Surface water hydrology issues are briefly discussed in the Hydrology and Water Resources Section of this Initial Study.

SITE SEISMICITY

Energy Commission staff reviewed the California Division of Mines and Geology publication "Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions," dated 1994 (CDMG 1994). The project is located within seismic zone 3 as delineated on Figure 16-2 of the 1998 edition of the California Building Code. No known faults cross the proposed expansion site or proposed linear facility improvements. The closest known active fault is the Nunez fault, located approximately 55 miles west of the site. The estimated peak horizontal ground acceleration for the project is less than 0.2g. This estimate is based upon a moment magnitude 8 earthquake on the San Andreas fault, approximately 60 miles west of the site.

LIQUEFACTION, HYDROCOMPACTION, SUBSIDENCE, EXPANSIVE SOILS, LANDSLIDES, AND EROSION

Liquefaction is a condition in which a cohesionless soil may lose shear strength due to a sudden increase in pore water pressure. Soils boring logs provided by the applicant indicate that the depth to ground water in 1987 was approximately 22 to 25 feet below existing grade (GWF 2000a, Appendix H, Plate no. 2). Ground water withdrawals have continued to exceed groundwater recharge rates in the region of the site. This means that the depth to ground water may have increased since 1987. Soils beneath the proposed expansion site include dense sandy to gravelly soils intermixed with silty sands and clay. Peak horizontal ground accelerations are expected to be less than 0.2g at the proposed power plant expansion site. Even though groundwater may be fairly high at the site (less than 50 feet below existing grade), the combination of dense in-situ soils and low peak ground accelerations indicates that the potential for liquefaction at the facility is negligible. Due to the dense nature of the soils and low peak ground acceleration, significant dynamic compaction at the site is also considered to be low. Due to the low topographic relief at the site and the low peak ground accelerations expected, the potential for lateral spreading is considered to be negligible.

Hydrocompaction is the process of the loss of soil volume upon the application of water. The soils at the site are dense enough that hydrocompaction is not considered to be a significant problem at the power plant location.

Ground subsidence in the vicinity of the project has been related to the localized drawdown of aquifers, so that the soil column in the aquifer compacts under its own weight without the presence of water to hold open the void space between soil

particles. The applicant has reported that the ground surface elevation in the site region has locally dropped up to four feet. This has not been noted at the project site or its affiliated linear facilities. The use of ground water for the project is proposed to be balanced by ground water injection so that the potential for ground subsidence by ground water withdrawal is not increased.

Soils that contain a high percentage of expansive clay minerals are prone to expansion, if subjected to an increase in water content. Expansive soils are usually measured with an index test such as the expansive index potential. In order for a soil to be a candidate for testing, the soil must have a high clay content and the clay must have a high shrink-swell potential and a high plasticity index. Two soil units are reported to occur within the footprint of the proposed power plant, Kimberlina fine sandy loam and the Cajon sandy loam. Neither soil type is considered to be prone to significant soil expansion due to their low clay content.

Landslide potential is considered to be negligible since the proposed expansion site is located in an area with a slope of less than 1 per cent.

None of the soil types anticipated to be encountered during the construction of the project are highly susceptible to erosion. The Applicant has indicated that adequate sedimentation and erosion controls will be employed, but has not provided a Stormwater and Erosion Control Plan for either the construction or operational phase of the project or the associated linear facilities that includes transmission lines and pipelines. This subject is dealt with in the Hydrology and Water Resources Section of this initial study.

GEOLOGICAL, MINERALOGICAL, AND PALEONTOLOGICAL RESOURCES

There are no known geological or mineralogical resources located at or immediately adjacent to the proposed expansion site. A paleontological resources field survey and sensitivity analysis was conducted by the applicant's consultant for the proposed power plant expansion and the proposed linear facility improvements to support the expansion. A minor fossil fragment was discovered at the expansion site but is not considered significant. The proposed expansion site has been disturbed in the past and is not likely to contain significant paleontological resources in-situ.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS – Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?		X		
b) Result in substantial soil erosion?		X		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse the loss of topsoil?		X		
d) Be located on expansive soil, as defined in Table 18- 1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?		X		
MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
PALEONTOLOGICAL RESOURCES -- Would the project:				
a) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

DISCUSSION OF IMPACTS

GEOLOGY AND SOILS

A. I. No IMPACT

The proposed power plant expansion and related linear facilities are not located on a fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist.

II. No IMPACT

The proposed project is located in California Building Code Seismic Zone 3. Estimated peak horizontal ground acceleration for the site is less than 0.2g. This is not considered to be a very high ground acceleration with respect to the facility described in the application.

III. No IMPACT

IV. No IMPACT

The potential for landsliding at or adjacent to the site is considered to be negligible since the topographic relief at and adjacent to the site and the proposed substation is low.

B. No IMPACT

C. No IMPACT

D. No IMPACT

E. No IMPACT

MINERAL RESOURCES

A. No IMPACT

B. No IMPACT

PALEONTOLOGY

A. No IMPACT

The soil at the proposed project has been disturbed by previous activities at the site. A minor fragment of fossilized bone was found at the project site; however, the fragment was not found in-situ and may have been a piece of debris from some other location. Energy Commission staff do not considered the fossilized bone

fragment to be a significant paleontological resource. No other fossils are known to be located on site.

CUMULATIVE IMPACTS

Staff concludes that there are no cumulative impacts.

CONCLUSIONS

The project will result in no significant impacts to the public or the environment with respect to geological hazards, geological, mineralogical, paleontological resources or to soils provided that the proposed conditions of exemption are implemented.

PROPOSED CONDITIONS OF EXEMPTION

GEO-1 Prior to the start of construction, the project owner shall assign to the project an engineering geologist(s), certified by the State of California, to carry out the duties required by the 1998 edition of the California Building Code (CBC) Appendix Chapter 33, Section 3309.4. The certified engineering geologist(s) assigned must be approved by the Compliance Project Manager (CPM). The functions of the engineering geologist can be performed by the responsible geotechnical engineer, if that person has the appropriate California license.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the Compliance Project Manager) prior to the start of construction, the project owner shall submit to the CPM for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal should include a statement that CPM approval is needed. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of its findings within 15 days of receipt of the submittal. If the engineering geologist(s) is subsequently replaced, the project owner shall submit for approval the name(s) and license number(s) of the newly assigned individual(s) to the CPM. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of the findings within 15 days of receipt of the notice of personnel change.

GEO-2 The assigned engineering geologist(s) shall carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4 Engineered Grading Requirement, and Section 3318.1 – Final Reports. Those duties are:

1. Prepare the Engineering Geology Report. This report shall accompany the Plans and Specifications when applying to the CBO for the grading permit.
2. Monitor geologic conditions during construction.
3. Prepare the Final Engineering Geology Report.

Protocol: The Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3309.3 Grading Designation, shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy of the site for the intended use as affected by geologic factors.

The Final Engineering Geology Report to be completed after completion of grading, as required by the 1998 CBC Appendix Chapter 33, Section 3318.1, shall contain the following: A final description of the geology of the site and any new information disclosed during grading; and the effect of same on recommendations incorporated in the approved grading plan. The engineering geologist shall submit a statement that, to the best of his or her knowledge, the work within their area of responsibility is in accordance with the approved Engineering Geology Report and applicable provisions of this chapter.

Verification: (1) Within 15 days after submittal of the application(s) for grading permit(s) to the CBO, the project owner shall submit a signed statement to the CPM stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications. (2) Within 90 days following completion of the final grading, the project owner shall submit copies of the Final Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3318 Completion of Work, to the CBO, and to the CPM on request.

PAL-1 Prior to the start of any project-related construction activities (defined as any construction-related vegetation clearance, ground disturbance and preparation, and site excavation activities), the project owner shall ensure that the designated paleontological resource specialist approved by the CPM is available for field activities and prepared to implement the conditions of certification.

The designated paleontological resources specialist shall be responsible for implementing all the paleontological conditions of certification and for using qualified personnel to assist in this work.

Protocol: The project owner shall provide the CPM with the name and statement of qualifications for the designated paleontological resource specialist.

The statement of qualifications for the designated paleontological resources specialist shall demonstrate that the specialist meets the following minimum qualifications: a degree in paleontology or geology or paleontological resource management; and at least three years of paleontological resource

mitigation and field experience in California, including at least one year's experience leading paleontological resource mitigation and field activities.

The statement of qualifications shall include a list of specific projects the specialist has previously worked on; the role and responsibilities of the specialist for each project listed; and the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

If the CPM determines that the qualifications of the proposed paleontological resource specialist do not satisfy the above requirements, the project owner shall submit another individual's name and qualifications for consideration.

If the approved, designated paleontological resource specialist is replaced prior to completion of project mitigation, the project owner shall obtain CPM approval of the new designated paleontological resource specialist by submitting the name and qualifications of the proposed replacement to the CPM, at least ten (10) days prior to the termination or release of the preceding designated paleontological resource specialist.

Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

Verification: At least sixty (60) days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall submit the name and resume and the availability for its designated paleontological resource specialist, to the CPM for review and approval. The CPM shall approve or disapprove of the proposed paleontological resource specialist.

At least ten (10) days prior to the termination or release of a designated paleontological resource specialist, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and resume of the proposed new designated paleontological resource specialist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

PAL-2 Prior to the start of project construction, the designated paleontological resource specialist shall prepare a Paleontological Resources Monitoring and Mitigation Plan to identify general and specific measures to minimize potential impacts to sensitive paleontological resources, and submit this plan to the CPM for review and approval. After CPM approval, the project owner's designated paleontological resource specialist shall be available to implement the Monitoring and Mitigation Plan, as needed, throughout project construction.

Protocol: The project owner shall develop a Paleontological Resources Monitoring and Mitigation Plan in accordance with the guidelines of the

Society of Vertebrate Paleontologists (SVP 1994) that shall include, but not be limited to, the following elements and measures:

- A discussion of the sequence of project-related tasks, such as any pre-construction surveys, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery; identification and inventory; preparation of final reports; and transmittal of materials for curation;
- Identification of the person(s) expected to assist with each of the tasks identified within this condition for certification, and a discussion of the mitigation team leadership and organizational structure, and the inter-relationship of tasks and responsibilities;
- Where monitoring of project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring;
- An explanation that the designated paleontological resource specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined;
- A discussion of equipment and supplies necessary for recovery of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
- Inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources; and
- Identification of the institution that has agreed to receive any data and fossil materials recovered during project-related monitoring and mitigation work, discussion of any requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution.
- At least forty-five (45) days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall provide the CPM with a copy of the Paleontological Resources Monitoring and Mitigation Plan prepared by the designated paleontological resource specialist for review and approval. If the plan is not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes.

PAL-3 Prior to the start of construction, and throughout the project construction period as needed for all new employees, the project owner and the designated paleontological resource specialist shall prepare, and the owner shall conduct CPM-approved training to all project managers, construction supervisors, and workers who operate ground disturbing equipment. The

project owner and construction manager shall provide the workers with the CPM-approved set of procedures for reporting any sensitive paleontological resources or deposits that may be discovered during project-related ground disturbance.

Protocol: The paleontological training program shall discuss the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during project activities. The training program shall be presented by the designated paleontological resource specialist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

Verification: At least thirty (30) days prior to the start of project construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall submit to the CPM for review and approval, the proposed employee training program and the set of reporting procedures the workers are to follow if paleontological resources are encountered during project construction.

If the employee training program and set of procedures are not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes, before the beginning of construction.

Documentation for training of additional new employees shall be provided in subsequent Monthly Compliance Reports, as appropriate.

PAL-4 The designated paleontological resource specialist shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, trenching, and/or augering in areas where potentially fossil-bearing sediments have been identified. If the designated paleontological resource specialist determines that full-time monitoring is not necessary in certain portions of the project area or along portions of the linear facility routes, the designated specialist shall notify the project owner.

Verification: The project owner shall include in the Monthly Compliance Reports a summary of paleontological activities conducted by the designated paleontological resource specialist.

PAL-5 The project owner, through the designated paleontological resource specialist, shall ensure recovery, preparation for analysis, analysis, identification and inventory, the preparation for curation, and the delivery for curation of all significant paleontological resource materials encountered and

collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.

Verification: The project owner shall maintain in its compliance files copies of signed contracts or agreements with the designated paleontological resource specialist and other qualified research specialists who will ensure the necessary data and fossil recovery, mapping, preparation for analysis, analysis, identification and inventory, and preparation for and delivery of all significant paleontological resource materials collected during data recovery and mitigation for the project. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources Report and shall keep these files available for periodic audit by the CPM.

PAL-6 The project owner shall ensure preparation of a Paleontological Resources Report by the designated paleontological resource specialist. The Paleontological Resources Report shall be completed following completion of the analysis of the recovered fossil materials and related information. The project owner shall submit the paleontological report to the CPM for approval.

Protocol: The report shall include (but not be limited to) a description and inventory list of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the paleontological resource specialist that project impacts to paleontological resources have been mitigated.

Verification: The project owner shall submit a copy of the Paleontological Resources Report to the CPM for review and approval under a cover letter stating that it is a confidential document. The report is to be prepared by the designated paleontological resource specialist within 90 days following completion of the analysis of the recovered fossil materials.

PAL-7 The project owner shall include in the facility closure plan a description regarding facility closure activity's potential to impact paleontological resources. The conditions for closure will be determined when a facility closure plan is submitted to the CPM twelve months prior to closure of the facility. If no activities are proposed that would potentially impact paleontological resources, then no mitigation measures for paleontological resource management are required in the facility closure plan.

Protocol: The closure requirements for paleontological resources are to be based upon the Paleontological Resources Report and the proposed grading activities for facility closure.

Verification: The project owner shall include a description of closure activities described above in the facility closure plan.

REFERENCES

- CDMG (California Division of Mines and Geology). 1991. (Fourth reprinting) Geologic Map of California, Fresno Sheet, Scale 1:250,000.
- CDMG (California Division of Mines and Geology). 1994. Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions, Scale: 1:750,000.
- GWF Power Systems Company, Inc. 2000a. Hanford energy Park Application for Small Power Plant Exemption. Submitted to the California Energy Commission on May 31, 2000.
- USDA (United States Department of Agriculture). 1986. Soil Survey of Kings County California, page 37.

HAZARDOUS MATERIALS AND WASTE

Testimony of Ramesh Sundareswaran and Michael Ringer

INTRODUCTION

The hazards and hazardous materials section discusses potential impacts of the proposed Hanford Energy Park (HEP) regarding hazards and hazardous materials. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts attributed to hazards and hazardous materials during project construction, operation and closure. Energy Commission designated all of the CEQA checklist items for hazards and hazardous materials staff as either "less than significant impact with mitigation incorporated" or "no impact". A brief hazards and hazardous materials overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to hazards and hazardous materials. The section concludes with the staff's proposed monitoring and mitigation measures with respect to hazards and hazardous materials, with the inclusion of four conditions of exemption.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

A framework, based on environmental laws, ordinances, regulations and standards (LORS), exists to reduce risks of accidents and reduce routine hazards. The following federal, state, and local laws generally apply to the protection of public health and the environment. Their provisions have established the basis for staff's determination regarding the significance and acceptability of the Hanford project related potential public health and environmental impacts.

FEDERAL

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986

The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III and Clean Air Act of 1990 established a nationwide emergency planning and response program, and imposed reporting requirements for businesses which store, handle, or produce significant quantities of extremely hazardous materials. The Act (codified in 40 C. F. R., § 68.110 et seq.) requires the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility through preparation of Risk Management Plans. The requirements of these Acts are reflected in the California Health and Safety Code, section 25531 et seq.

RESOURCE CONSERVATION AND RECOVERY ACT, RCRA (42 U.S.C. § 6922)

RCRA establishes requirements for the management of hazardous wastes from the time of generation to the point of ultimate treatment or disposal. Section 6922 requires the generators of hazardous wastes to comply with requirements regarding:

- Record keeping practices which identify the quantities and disposal of hazardous wastes generated,
- Labeling practices and use of appropriate containers,
- Use of a recording or manifest system for transportation, and
- Submission of periodic reports to the EPA or an authorized state agency.

TITLE 40, CODE OF FEDERAL REGULATIONS, PART 260

These sections specify the regulations promulgated by the EPA to implement the requirements of RCRA as described above. To facilitate such implementation, the defining characteristics of each hazardous waste are specified in terms of toxicity, ignitability, corrosivity, and reactivity.

STATE

CALIFORNIA HEALTH AND SAFETY CODE § 25100 ET SEQ. (HAZARDOUS WASTE CONTROL ACT OF 1972, AS AMENDED)

This act creates the framework under which hazardous wastes must be managed in California. It mandates the State Department of Health Services (now the Department of Toxic Substances Control or DTSC, under the California Environmental Protection Agency, or Cal EPA) to develop and publish a list of hazardous and extremely hazardous wastes, and to develop and adopt specific criteria and guidelines for classifying such wastes. The act also requires all hazardous waste generators to file specific notification statements with Cal EPA and creates a manifest system to be used when transporting such wastes.

CALIFORNIA HEALTH AND SAFETY CODE, SECTION 25534

The California Health and Safety Code, section 25534, directs facility owners who store or handle acutely hazardous materials in reportable quantities, to develop a Risk Management Plan (RMP) and to submit it to appropriate local authorities, the United States Environmental Protection Agency (EPA), and the designated local Administering Agency for review and approval. The plan must include an evaluation of the potential impacts associated with an accidental release, the likelihood of an accidental release occurring, the magnitude of potential human exposure, any pre-existing evaluations or studies of the material, the likelihood of the substance being handled in the manner indicated, and the accident history of the material.

CALIFORNIA HEALTH AND SAFETY CODE, SECTION 41700

California Health and Safety Code, section 41700, requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”

CALIFORNIA GOVERNMENT CODE, SECTION 65850.2

California Government Code, section 65850.2, restricts the issuance of an occupancy permit to any new facility involving the handling of acutely hazardous materials until the facility has submitted an RMP to the administering agency with jurisdiction over the facility.

TITLE 8, CALIFORNIA CODE OF REGULATIONS, SECTION 5189

Title 8, California Code of Regulations, section 5189, requires the owners of facilities that handle very large quantities of hazardous materials to develop and implement effective Process Safety Management (PSM) plans to insure safe handling of such materials. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process. Facilities that trigger PSM requirements are also automatically in the most stringent RMP program level.

TITLE 14, CALIFORNIA CODE OF REGULATIONS, § 17200 ET SEQ. (MINIMUM STANDARDS FOR SOLID WASTE HANDLING AND DISPOSAL)

These regulations specify the minimum standards applicable to the handling and disposal of solid wastes. They also specify the guidelines necessary to ensure that all solid waste management facilities comply with the solid waste management plans of the administering county agency.

TITLE 22, CALIFORNIA CODE OF REGULATIONS, § 66262.10 ET SEQ. (GENERATOR STANDARDS)

These sections establish specific requirements for generators of hazardous wastes with respect to handling and disposal. Under these requirements, all waste generators are required to determine whether or not their wastes are hazardous according to state-specified criteria. As with the federal program, every hazardous waste generator is required to obtain an EPA identification number, prepare all relevant manifests before transporting the waste off-site, and use only permitted treatment, storage, and disposal facilities. Additionally, all hazardous wastes are required to be handled only by registered hazardous waste transporters. Requirements for record keeping, reporting, packaging, and labeling are also established for each generator.

LOCAL

UNIFORM FIRE CODE

The Uniform Fire Code (UFC) contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. The latest revision to Article 80 was in 1997 (UFC, 1997). These articles contain minimum setback requirements for the outdoor storage of ammonia.

CALIFORNIA BUILDING CODE

The California Building Code also contains requirements regarding the storage and handling of hazardous materials. The Chief Building Official must inspect and verify compliance with these requirements prior to issuance of an occupancy permit.

SETTING

The proposed Hanford Energy Park (HEP) project is to be located adjacent to the GWF Power Systems Company's existing cogeneration plant in the Kings Industrial Park, on the southern border of rural Hanford, California. The primary fuel source for the HEP project is natural gas and Selective Catalytic Reduction (SCR) is to be used to reduce nitrogen oxide (NOx) emissions from the combustion of natural gas in the combustion turbine. Aqueous ammonia would be used as a reactant within the SCR process to convert the NOx into nitrogen and water vapor. The existing anhydrous ammonia system at the cogeneration plant would be converted to aqueous ammonia use. A number of other hazardous chemicals would also be used at the HEP site.

Safeguards that are already in place at the existing cogeneration plant would be incorporated into the proposed HEP project. Additional proposed safeguards and measures to greatly reduce the opportunity for, or the extent of, exposure to hazardous materials or other hazards would supplement these in turn.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials?		X		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

DISCUSSION OF IMPACTS

A number of checklist issues are evaluated and discussed below that address risk due to potential accidents or upsets as a result of the project.

A. Less Than Significant Impact with Mitigation Incorporated

A variety of hazardous materials are proposed for storage and use during the construction of the project and for routine plant operation and maintenance (O&M) following construction (HEP 2000a). Gasoline, diesel, petroleum- based lubricants, solvents, paints, paint thinners, resins and concrete enhancers are listed for use during the construction phase. The O&M materials include hydraulic oil, transformer oil, nitrogen, nitric oxide, carbon monoxide, sodium hypochlorite, corrosion inhibitors, water conditioners, aqueous ammonia, halon and piped-in natural gas.

The physico-chemical characteristics of ammonia and natural gas and their proposed use in substantial amounts during the operation of the plant could pose some potential for off-site impacts as discussed below. The potential threats from

the other hazardous materials are not as significant as they are to be stored, handled or used for routine purposes in relatively smaller quantities at the plant facility and they are also known to have lower toxicities and/or environmental mobilities.

AQUEOUS AMMONIA

Selective Catalytic Reduction (SCR) is proposed to reduce nitrogen oxide (NO_x) emissions to meet the plant's air quality permit requirements. Aqueous ammonia would be made to react with a catalyst to convert the NO_x into inert water vapor and nitrogen in the SCR process. The aqueous ammonia, comprising approximately, 29.5% ammonia and 70.5% water, is considered a regulated material exceeding reportable quantities defined in the California Health & Safety Code section 25532(j). The Applicant has proposed that the anhydrous ammonia currently being used at the existing GWF plant will be replaced with aqueous ammonia for NO_x control purposes before the proposed HEP plant commences commercial operations (HEP 2000a). The choice of aqueous ammonia as an SCR reacting agent significantly reduces the risks that would be associated with use of the more lethal anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the more lethal anhydrous form, which is stored as a liquefied gas at elevated pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release that can rapidly introduce large quantities of the material to the ambient air, where it can be transported in the atmosphere and result in high down-wind concentrations. Spills associated with the aqueous form are also much easier to contain than those associated with the anhydrous form. In addition, relatively slow mass transfer from the free surface of the spilled aqueous solution limits emissions from a spill of aqueous ammonia.

Aqueous ammonia is typically handled safely and without any major incidents. Any mishandling, however, can cause harm. A significant number of modern power plants routinely use aqueous ammonia and the California Energy Commission has licensed many such plants. Much of the risks associated with ammonia use are already reduced through the HEP project's proposed use of the aqueous form of ammonia. Project compliance with LORS make it likely that the aqueous ammonia poses no significant threat to public health and the environment.

The Applicant has indicated that hazardous materials shipments to the Hanford site would originate either in Fresno or Bakersfield travel initially along freeway SR 99 and then on to divided highway SR 198. From SR 198, the shipment would transit on local two-lane roads, 11th and Idaho Avenues, in succession before reaching the Hanford site. The transportation and delivery of hazardous materials including aqueous ammonia particularly on California freeways, is routinely regulated and controlled by various federal and state laws, ordinances, regulations, and standards as discussed in the section titled Traffic and Transportation. The chance for an accident however does exist. According to the Applicant, there is a 5.7 in a million conditional chance (probability of 0.0000057) in any particular year that there could be an aqueous ammonia tanker release incident following an accident during delivery to the Hanford project (HEP 2000b). This probability or chance is spread

over the entire delivery route meaning this incident can happen at any point along the entire route. There are a number of accident related transportation studies that are strong testimonies to the fact that such incidents and corresponding chances are highly dependent on the type of roadway and surroundings. It has been reported that the truck accident frequency is highest for an undivided multilane road at 5.44 accidents per million miles compared to 0.93 accidents per million miles for a freeway in rural California (Davies et al. 1992). Similarly, the accident rate in urban California is highest for a multilane that is undivided at 13.02 accidents per million miles vis-a-vis 1.59 accidents per million miles on a freeway. A recent study went even further by concluding that releases of hazardous materials on freeways rarely play a role in deaths or injuries (FMCSA, 2000). It is therefore reasonable to say that the likelihood of an accident involving a release of ammonia is probably higher on the local Hanford roads than on the freeways for deliveries to the site. This is echoed in a report that observed that accident rates are typically much higher for two-lane rural roads compared to multi-lane highways (USDOT 1998).

Staff has conducted its own probabilistic assessment for the chance of an accident involving an ammonia release. It focuses on that route segment where a tanker truck would turn first onto 11th Avenue from SR 198, travel the entire length of 11th up to Idaho Avenue and continue traveling on Idaho culminating at the Hanford site gates. This segment of the delivery route is approximately 5 miles on two-lane roads in a rural setting. The probability of an accident involving an ammonia release for this 5-mile segment is based on the truck accident rate and the conditional probability of a release given that an accident has occurred for an aqueous ammonia truck for that segment of the route and area setting (Harwood et al. 1990). This approach is based on the premise that the number of truck accidents per truck-mile (truck accident rate) and conditional probability of a release given that an accident has occurred are both specific functions of the roadway type and the area in which the roadway is located. A truck accident rate of 1.73 accidents per million miles and a probability of 0.10 of a release given an accident have been proposed respectively for a two-lane road in rural California (Pijawka et al. 1995). This means there is a chance of 0.000000865 of an accident involving an ammonia release for those 5 miles. Given the slight chance or very low probability, it is unlikely that such an accident would occur. Recent research suggests that hazardous materials are typically a minor element in hazardous materials truck accidents as those materials usually stay in the cargo compartment in such instances (FMCSA 2000).

Staff therefore concludes that any potential adverse impacts from the transport of aqueous ammonia can be easily limited to a level of insignificance through the Applicant's conformance to applicable standards and laws, reinforced by stipulations in the Conditions of Exemption (HAZ-1).

NATURAL GAS

The primary fuel source proposed for the Hanford facility is natural gas. It poses a fire and/or explosion risk as a result of its flammability. While natural gas will be used in significant quantities, it will not be stored on-site. The risk of a fire and/or explosion from natural gas can be reduced to insignificant levels through adherence

to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) Code 85A requires: 1) the use of double block and bleed valves for gas shut-off; 2) automated combustion controls; and 3) burner management systems (NFPA 1987). These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures will require air purging of the gas turbines prior to start-up, thus precluding the presence of an explosive mixture.

The facility will also require the installation of one natural gas distribution pipeline that could result in accidental release of natural gas.

It is staff's belief that the distance separating the public from the gas line and equipment utilizing natural gas preclude the potential for significant impact, in the event of an accident.

WASTE MANAGEMENT

The Hanford Energy Park would generate minor quantities of hazardous wastes during project construction and operation. The project owner would therefore be classified as a generator of hazardous waste and would fall under the jurisdiction of federal law (the Resource Conservation and Recovery Act – 42 U.S.C. 6901 et seq.) and state law (California Hazardous Waste Control Act – Health and safety Code Sections 25100 et seq.). These laws govern the storage, transport, and disposal of hazardous waste.

The types of hazardous wastes generated during construction include small amounts of contaminated soil, waste lubricating oil, cleaning solvents, paints, batteries, oily rags and absorbent, and welding materials. Table 8.13-1 of the Application lists the types and quantities of wastes generated during construction.

Hazardous wastes generated during facility operation include spent air pollution control catalyst, used oil, paint and thinner waste, batteries, oil and natural gas filters, and lamps. Table 8.13-2 of the Application lists the types and quantities of hazardous wastes generated during operation of the facility.

Some of the hazardous wastes can be recycled, such as used oil, solvents, and batteries. All hazardous wastes generated during construction and operation will be managed in accordance with federal and state laws and regulations. The wastes will be properly characterized, placed into covered, temporary storage containers, and transported offsite to approved treatment, storage, or disposal facilities by licensed hazardous waste haulers.

Because the waste management and disposal measures proposed by the Applicant will comply with all applicable federal and state laws, ordinances, regulations, and standards, staff expects that there will be no significant impacts to the public or the environment from disposal of project-related hazardous wastes.

B. Less Than Significant Impact with Mitigation Incorporated

Aqueous ammonia is being proposed for use in controlling NO_x emissions created during the combustion of natural gas at the facility. The applicant is proposing to convert the existing anhydrous ammonia system at the adjacent plant to aqueous ammonia use. The accidental release of aqueous ammonia without adequate and proper mitigation can result in hazardous down-wind concentrations of ammonia gas.

To assess the potential impacts associated with an accidental release of ammonia, staff typically evaluates where four "bench mark" exposure levels of ammonia gas occur off-site in parts per million (ppm). These include: 1) the lowest concentration posing a risk of lethality, 2,000 ppm; 2) the Immediately Dangerous to Life and Health level (IDLH) of 300 ppm; 3) the Emergency Response Planning Guideline (ERPG) level 2 of 200 ppm, which is also the RMP level 1 criterion used by EPA and California; and 4) the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm. (A detailed discussion of the exposure criteria considered by staff and their applicability to different populations and exposure-specific conditions is provided in Appendix A of this analysis.) If the exposure associated with a potential release would exceed 75 ppm at any public receptor, staff will presume that the potential release poses a risk of significant impact. However, staff may also assess the probability of occurrence of the release and/or the nature of the potentially exposed population. Staff may, based on such analysis, determine that the likelihood and extent of potential exposure are not sufficient to support a finding of potentially significant impact.

Two aqueous ammonia release scenarios, a worst case and an alternative toxic release case, were modeled and evaluated by the Applicant. The modeling was done in accordance with the Federal and California Accidental Release programs. The worst-case release scenario is based on a failure of the aqueous ammonia storage tank. The modeling reflects pessimistic meteorological conditions with wind speed of one meter per second (3.4 miles per hour) and F stability and suggests that that a 75 ppm impact area with a radius approximately 3510 feet (0.66 miles) from the storage tank. The alternative release scenario under consideration is a transfer hose release failure during offloading of an ammonia delivery truck. Again, pessimistic atmospheric conditions involving wind speeds of 3 meters/sec (6.7 miles per hour) and D stability were used in the modeling. An impact area with a radius of approximately 1650 feet (0.31 miles) was forecast for the alternative release scenario. The closest public receptor, the Pirelli-Armstrong Corporation, is located approximately 500 feet to the south of the project site. The nearest residence is located approximately 3200 feet to the east of the project site.

The Applicant through a probabilistic assessment has estimated the potentials for both release scenarios. There is a 0.021 in a million chance that a worst-case scenario can occur and a 4.37 in a million chance that a release from an alternative scenario can occur on an annual basis according to the assessment. The probability of a worst case scenario during the lifetime of the proposed facility is estimated to be 0.63 in a million while that for the alternative scenario is 1.31 in ten thousand. A

conclusion that can be drawn from these probabilities is that the worst case release scenario is not plausible

Further, the risks posed by either scenario can be characterized as diminished for the following reasons. The modeling used in both scenarios is based on very conservative assumptions regarding atmospheric conditions. In any event, the facility would need to revise and update its existing RMP, to reflect the conversion to aqueous ammonia. The conversion would result in an alteration of the Program level resulting in mostly likely a Program 2 level RMP. (A Program 3 level RMP, the most stringent, is currently in force at the cogeneration plant as a result of the use of anhydrous ammonia). Due to the low concentration of ammonia in the aqueous solution, 29.5 per cent, the facility is not required to meet the stringent requirements of OSHA's Process Safety Management Standard. The ammonia storage tank and handling systems will be equipped with continuous level gauges, overflow and emergency shut-off valves. Ammonia leak detectors and alarms will also be available to sense and provide warnings about ammonia releases to the air. Secondary containment will be used as part of passive mitigation to provide containment for any release. The existing containment for the storage tank is sized to contain at least the contents of the tank plus an allowance for precipitation. The existing ammonia truck unloading area is sloped and linked to a drain that is connected to the existing plant drainage system. The unloading area has been sized to contain at least the volume of a delivery truck in the event of a release. These features are important as aqueous ammonia when released typically evaporates slowly from a resulting pool that is formed, into a vapor cloud. Any containment would therefore reduce the size of a pool and hence result in a smaller vapor cloud. Reducing the surface area of the retained ammonia that is in contact with the atmosphere can further reduce the evaporation significantly. The Applicant has proposed the incorporation of additional passive mitigation involving a surface area reducing system (sphere-like balls) within the tank storage and unloading areas to reduce significantly ammonia emissions from a spill.

Staff evaluated the impacts of using the sphere-like balls and determined that the previously forecast impact areas would have significantly reduced footprints. The worst-case scenario would have a contracted footprint of approximately 1000 feet and the alternative scenario would have a reduced radius that is well confined to the plant's premises. Though beyond the reach of the closest residence, the worst-case scenario footprint theoretically could still potentially impact the Pirelli-Armstrong Corporation building. However, the likelihood of a worst case scenario accident is significantly diminished as there is only a 0.021 in a million annual or 0.63 in a million lifetime probability that a storage tank rupture could occur. Further, the consequences associated with this risk situation would not result in anything severe such as death or irreversible health effects due to the 75 ppm airborne concentrations. Overall, the worst case scenario is considered as almost impossible as release conditions associated with it are over estimates and based on very conservative conditions. The alternative scenario is considered more realistic. In spite of its relatively higher likelihood of occurrence, ammonia concentrations exceeding 75 ppm, stemming from this release scenario, would be confined almost entirely to the HEP site. Workers at the project site would however be appropriately

trained to minimize or avoid exposure and respond to ammonia and other hazardous materials.

Compliance with applicable LORS, proposed and existing safeguards, and Conditions of Exemption (HAZ-2 to HAZ-4) should greatly reduce the opportunity for, or extent of, exposure to ammonia vapors for the public.

C. Less Than Significant Impact

There are currently no known schools within a ¼ mile radius from the Hanford project. The schools nearest to the proposed location are Lakeside Elementary School, about 2.5 miles southeast of the site, and Gardenside Elementary School, about 2.6 miles north-northeast of the site. Land use within the ¼ mile radius is either agricultural or industrial and can be expected to remain as such in the future. No hazards from hazardous materials at the proposed plant to schools are therefore existent.

The most likely route for transporting wastes offsite would be 11th Avenue north to state route 198. There are two schools within ¼ mile of 11th Avenue, Roosevelt and Martin Luther King Elementary. During the construction phase of the project, hazardous wastes would be sent from the site to treatment or disposal facilities on a biweekly or monthly basis. During plant operation, hazardous waste shipments would occur approximately once every 90 days. In all cases, licensed hazardous waste transporters using proper containers and transportation procedures conforming to applicable Caltrans requirements would be used. Staff therefore concludes that impacts from the transportation of project-related hazardous wastes would be less than significant.

D. No Impact

A Phase I Environmental Site Assessment (ESA) was conducted for the proposed site (Application, Appendix F). The ESA included a review of federal, state, and local regulatory agency databases of businesses and properties that handle hazardous materials or wastes, or are known locations of releases of hazardous substances. The site was not listed on any of the databases reviewed.

E. No Impact

The Hanford project is not located within an airport use plan. The nearest airport, Hanford Municipal Airport, is located approximately more than three miles to the northeast of the project site.

No safety hazards are therefore posed for those persons in the project area.

F. No Impact

A private airstrip, Blair Strip Airport, did exist for some time up to late 70s within the project vicinity. The strip was located approximately 2000 feet to the northeast of the Hanford site and was used for crop dusting by the then owner. It has since been ploughed over and is being used for parking trucks by the current property owner, Calcot Limited (Smith 2000, Zumwalt 2000).

There are therefore no anticipated impacts from a private airstrip.

G. No Impact

It appears that the construction and operation of the project would improve upon the reliability of the local power system and therefore benefit the local emergency response capabilities.

No interference with the City of Hanford emergency response plan or emergency evacuation plan is evident.

H. No Impact

The proposed site would be mostly paved and hence clear of substantial vegetation. The immediate area around the site would be landscaped with limited brush, shrubs or trees and maintained and irrigated so as not to colonize the site.

Fire hazard from vegetation is not a concern since those trees, brush, or grass surrounding the site would be maintained and irrigated on a regular basis.

CONCLUSIONS

By incorporating the appropriate mitigation measures, the routine transport or use of hazardous materials at the project will therefore result in less than significant impacts to the public or the environment.

PROPOSED CONDITIONS OF EXEMPTION

HAZ-1 All aqueous ammonia deliveries to the facility shall be in tanker trucks that meet or exceed the US Department of Transportation requirements for hazardous materials as established in the Code of Federal Regulations No. 49 Parts 171-180.

Verification: The project owner shall include in its Monthly Compliance Reports, copies of all regulatory permits/licenses acquired by the project owner and/or subcontractors concerning the transport of aqueous ammonia and other hazardous materials.

HAZ-2 The project owner shall not use any hazardous material in reportable quantities, as specified in Title 40, CFR part 355, Subpart J, section 355.50, not listed in Tables 8.12.1 and 8.12.2 of the SPPE Application dated May 19, 2000 unless approved in advance by the CPM.

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility in reportable quantities.

HAZ-3 The project owner shall provide a revised and updated Risk Management Plan (RMP) to the Kings County Environmental Health Department and the CPM for review at the time the RMP is submitted to the U.S. Environmental

Protection Agency (EPA). The project owner shall ensure that the final plan reflects all recommendations of the Kings County Environmental Health Department and the CPM. A copy of the final plan, reflecting all comments, shall be provided to the Kings County Environmental Health Department and the CPM. The project owner shall also develop and implement a safety management plan for delivery of ammonia. The plan shall include procedures, protective equipment requirements, training and a checklist.

Verification: At least sixty (60) days prior to the first HEP plant startup test, the project owner shall provide the final RMP listed above to the CPM for approval. The safety management plan shall also be provided to the CPM for review and approval at least 60 days prior to the first HEP plant startup test.

HAZ-4 The project owner shall ensure that the existing anhydrous ammonia system is operationally fit for conversion to aqueous ammonia use.

Verification: At least sixty (60) days prior to the first HEP plant startup test, the project owner will provide an inspection report certified by a registered engineer that the system is operationally fit for aqueous ammonia use. The registered engineer shall verify that the ammonia tank meets the minimum requirements of American Petroleum Institute 620 vessel code or its equivalent and visually inspect and x-ray the system, as appropriate, for corrosion and cracking. The ammonia storage tank shall also undergo an inspection by a registered engineer to verify that the ammonia storage tank is designed to meet CBC Seismic Zone 3 code requirements.

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HYDROLOGY AND WATER QUALITY

Richard Sapudar and Robert Anderson

INTRODUCTION

This analysis examines the water and soil resource aspects of the Hanford Energy Park (HEP), specifically focusing on the following areas of concern:

- project how the project's demand for water affects surface or groundwater supplies;
- whether construction or operation will lead to accelerated wind or water erosion and sedimentation;
- whether project construction or operation will lead to degradation of surface or groundwater quality; and
- whether the project will comply with all applicable laws, ordinances, regulations and standards.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

FEDERAL

CLEAN WATER ACT

The Clean Water Act (33 USC section 1257 et seq.) requires states to set standards to protect water quality. Point source discharges to surface water are regulated by this act through requirements set forth in a National Pollutant Discharge Elimination System (NPDES) Permit. Stormwater discharges during construction and operation of a facility also fall under this act and must be addressed through either a project specific or general NPDES permit. In California, the nine Regional Water Quality Control Boards (RWQCB) administer the requirements of the Clean Water Act. Section 404 of the act regulates the discharge of dredged or fill material into waters of the United States, including rivers, streams and wetlands. The Army Corps of Engineers (ACOE) issues site-specific or general (nationwide) permits for such discharges.

STATE

PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Water Quality Control Act of 1967, Water Code section 13000 et seq., requires the State Water Resources Control Board and the nine regional RWQCBs to adopt water quality criteria to protect state waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards and implementation procedures. The criteria for the project area are contained in the Central Valley Region Water Quality Control Plan. This plan sets numerical and/or narrative water quality standards controlling the discharge of

wastes with elevated temperature to the state's waters. These standards are applied to the proposed project through the Waste Discharge Requirements (WDRs) permit.

- Section 13552.6 of the Water Code specifically identifies that the use of potable domestic water for cooling towers, if suitable recycled water is available, is an unreasonable use of water. The availability of recycled water is based upon a number of criteria, which must be taken into account by the SWRCB. These criteria are that: the quality and quantity of the reclaimed water are suitable for the use; the cost is reasonable, the use is not detrimental to public health, will not impact downstream users or biological resources, and will not degrade water quality.
- Section 13552.8 of the Water Code states that any public agency may require the use of recycled water in cooling towers if certain criteria are met. These criteria include that recycled water is available and meets the requirements set forth in section 13550; the use does not adversely affect any existing water right; and if there is public exposure to cooling tower mist using recycled water, appropriate mitigation or control is necessary.

The SWRCB has also adopted a number of policies that provide guidelines for water quality protection. The principle policy of the State Board which addresses the specific siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling (adopted by the Board on June 19, 1976 by Resolution 75-58). This policy states that use of fresh inland waters should only be used for powerplant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. This SWRCB policy requires that power plant cooling water should, in order of priority come from wastewater being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, and other inland waters. This policy goes on to address cooling water discharge prohibitions.

Sections 401 of the Clean Water Act provides for state certification of federal permits allowing discharge of dredged or fill material into waters of the United States. These certifications are issued by the RWQCBs. For this project, any 401 certification will be handled with the Waste Discharge Requirements (WDR) permit.

THE SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65)

The Safe Drinking Water and Toxic Enforcement Act of 1986, Health and Safety Code section 25249.5 et seq., prohibits the discharge or release of chemicals known to cause cancer or reproductive toxicity into drinking water sources.

LOCAL

KINGS COUNTY

County Well Ordinance specifies requirements for well installation.

RESOURCE CONSERVATION DISTRICT

The RCD administers soil resource policies to maintain agricultural productivity, and provides recommendations for handling of soil during grading and construction to avoid increased erosion. The project will obtain such recommendations.

CITY OF HANFORD

Chapter 13.08 of the Hanford municipal code defines the requirements for industrial and other discharges to the city sewer system including, limitations on discharges, service charges, monitoring requirements, and reporting requirements. GWF currently holds an industrial wastewater discharge permit for its current operation, which allows a discharge to the Hanford sewer system. The existing permit will be amended as required to accommodate the project's discharge.

SETTING

The land use in the vicinity of the HEP is primarily agricultural, with a few businesses and residences in the vicinity. The HEP will be constructed adjacent to property that is currently being used for energy generation. The HEP project area is located approximately three miles south of downtown Hanford, California within the southwest quarter of Section 13, Township 19 South, Range 21 East on flat topography with a maximum relief across the area of approximately 10 feet. The Lakeside Ditch and Sand Slough ditches transfer irrigation water from the Kings River located approximately 10 miles to the north, to agricultural end users. These ditches also provide storm water drainage for the region, with ground water recharge basins located to the west and south of the HEP.

SOILS

The soils in the project area are shown on Soil and Water Table 1, along with the areas that will be impacted by the project construction and operation. The laydown areas are currently undeveloped industrial land which has historically been used for agriculture. The Kimberlina fine sandy loam soil type covers the entire site, and characteristically contains a high concentration of salts and are alkaline in nature. Due to its loose consistency, it is limited to uses that include embankments, dikes, and levees. The HEP site and construction laydown area are not currently used for agriculture, nor have they been within the past six years. Approximately 3 to 5 acres of surface soils will be excavated during construction of the primary facility.

The proposed natural gas pipeline and transmission line routes will result in the disturbance of approximately 10-25 acres. The erosion hazard for the soils along the transmission line route are considered slight by the Applicant, although construction activities may expose materials that may be susceptible to wind and water erosion. These areas will be revegetated or covered with synthetic mats. After grading and compacting, the soils excavated from the HEP site will be revegetated or covered with a synthetic mat as necessary to reduce the potential for wind and water erosion. A storm water pollution prevention plan (SWPPP) required by the General Storm Water Permit for Construction will be required from the Applicant, the contents of which are discussed further under checklist item.

Soils and Water Table 1
HEP Facility Water Balance

Component Stream	Annual	Maximum
	Ann. Average ¹ gpm	Max Daily ² gpm
Water to cooling Tower	336.2	432.4
Cooling Tower Blowdown	86.2	100.4
Cooling Tower Evaporation	334.0	415.6
Cooling Tower Drift	0.7	0.7
Water to CTG Evap Cooler	5.1	15.6
Total Water to HRSG	1000.7	956.4
Water to ST/from Condenser	499.4	506.4
Net Water to Demin from RO	108.0	97.3
Demin Reject to Off-site Disp	0.5	0.5
Water to Aux Boiler	0.0	0.0
Steam Export	492.3	441.1
Water to CTG Wash *(3)	0.3	0.3
Fire Water Supply	0.0	0.0
Domestic Water Use	0.0	0.0
Stormwater Runoff	0.0	0.0
Aux Cooling Water Makeup	0.2	0.2
HRSG Blowdown *(4)	9.0	8.6
Aux Boiler Blowdown	0.0	0.0
CTG Evap Cooler Blowdown	0.05	0.2
Condensate Return	393.82	353.1
Raw Water to RO	188.93	188.7
RO Reject to CT	75.57	75.5
Safety Showers	0.0	0.0
On-Site Well Water Use	525.4	621.3
On-Site Well Water Use (acre-ft/yr)	847.5	1002.3
On-Site Well Water Use (acre-ft/yr, cf=.9)	762.7	902.1

Notes

1. Annual average condition is 63 °F, 60% relative humidity, highest export stream production, and 5.3 cycles of concentration.
2. Maximum daily conditions is 98 °F, 36% relative humidity, highest export stream production, and 5.5 cycles of concentration.
3. CTG on-line wash done 1x/day for 30 minutes at 13 gpm, flow calculated as a daily average.
4. HRSG Blowdown rate is conservatively estimated high at approximately 1% of the HRSG production.

REGIONAL WATER SUPPLY

The water needs of Kings County are supplied by both ground and surface water, with a total annual water use of 1.4 million acre-feet. Approximately 32 to 35 percent is derived from groundwater, with the remainder from surface water obtained from the Kings River and the State Water Project. The project site is within the Tulare Lake Groundwater Basin, which is located beneath both Kings and Tulare Counties. The TLGB has a surface area of approximately 524,800 acres and storage capacity of 1.5 million acre-feet. Approximately 648,000 acre-feet of groundwater is used for agriculture, with 24,000 acre-feet used for urban/domestic and industrial purposes.

Groundwater is found in an upper and lower aquifer system separated by a regional clay layer known as the Corcoran Clay layer geologically derived from the Tulare Formation. The clay layer is located approximately 450 feet below ground surface and is approximately 50 to 100 feet thick; it provides a low permeability confining layer separating the upper and lower aquifers. The upper aquifer consists of interbedded sands and clays that contain water under both unconfined and semiconfined conditions, with lower aquifer having a similar consistency.

Static water levels from wells in the area indicate that the static pressure of both aquifers is about the same, which is substantially due to hydraulic continuity existing between the aquifers. This hydraulic connectivity between the aquifers results from both well construction penetrating the Corcoran Clay layer, and the fact that the Corcoran Clay layer is discontinuous in the region. Data obtained in the spring of 1999 indicates groundwater in the vicinity of the project is about 80 feet bgs.

Surface water in the area is supplied by the Department of Water Resources State Water Project California Aqueduct, the Lakeside Ditch from the Kings River, with Sand Slough providing stormwater drainage. Stormwater is used to recharge groundwater through the use of recharge basins operated by the Kings County Water District.

HEP WATER SUPPLY

The HEP will use groundwater to cool the project through the use of evaporative (wet) cooling. An existing well on the GWF land adjacent to the project will be used to supply both the HEP and the existing plant with water, as it has sufficient capacity for both operations. Potable and general service for the project will be provided by the City of Hanford's domestic water supply. Total annual water use for the HEP will be average 850 acre-feet/year (276 million gallons), with 82 percent of this water being makeup water for the cooling tower. The water quality of the groundwater to be used for the project is shown in Soil and Water Table 2.

The Tulare Lake Groundwater Basin is currently overdrafted to the extent of 229,000 acre-feet/year. The HEP has developed a groundwater use mitigation plan to prevent any additional overdraft related to the project from occurring (AFC Section 8.14.2). HEP intends to mitigate the groundwater use of the project through a purchase of State Water Project (SWP) water from the Angiola Water District, and a series of agreements with Kings County Water District, J.G. Boswell Company, the Tulare Lake Basin Water Storage District, and the Peoples Ditch. The same amount of water consumed by the project, approximately 850 acre-feet/year, will eventually be recharged to same aquifer from which groundwater is extracted by HEP for cooling purposes.

The purchase agreement for 1,500 acre-feet of Table A Entitlement SWP water is between AWD and GWF Power Systems. The agreement between the Tulare Lake Basin Water Storage District and GWF grants GWF the right to utilize the facilities owned by the storage district to deliver and convey the 1,500 acre-feet of water from the SWP to Boswell. The exchange agreement between Boswell and GWF allows the 1,500 acre-feet of SWP water owned by GWF to be delivered to Boswell

in exchange for 1,500 acre-feet of Boswell Kings River entitlement. A water banking and mitigation agreement between KCWD and GWF allows the 1,500 acre-feet of Boswell Kings River Entitlement to be delivered to the KCWD on behalf of GWF.

Soil and Water Table 2
GROUNDWATER PUMPING TEST ANALYTICAL DATA
GWF WATER PRODUCTION WELL#1
Hanford, California

<u>Analyts</u>	<u>Units</u>	<u>DL</u>	<u>January 1998</u>					<u>Constant</u>	<u>MCL</u>
			<u>400</u>	<u>600</u>	<u>800</u>	<u>1000</u>	<u>1200</u>	<u>Rate Test</u>	
			<u>GPM</u>	<u>GPM</u>	<u>GPM</u>	<u>GPM</u>	<u>GPM</u>	<u>800 GPM</u>	
Alkalinity	mg/l	5	150	150	160	160	150	140	\\
Aluminum	mg/l	0.05	0.93	0.92	0.94	1.1	1	\\	1
Apparent Color	C.U.	3	45	40	45	45	40	\\	15
Arsenic	mg/l	0.0005	0.0064	0.0054	0.005	0.0051	0.0047	0.0447	0.05
Arsenic Dissolved	mg/l	0.0005	0.0055	0.0044	0.0041	0.0047	0.0046	\\	\\
Barium	mg/l	0.01	0.01	0.01	0.01	0.02	0.02	0.01	1
Bicarbonate	mg/l	5	130	130	130	130	130	110	\\
Boron	mg/l	0.05	0.4	0.43	0.46	0.46	0.46	0.424	\\
Boron Dissolved	mg/l	0.05	0.42	0.43	0.43	0.44	0.43	\\	\\
Cadmium	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
Calcium	mg/l	0.05	1.7	1.5	1.5	1.5	1.5	1.5	\\
Carbonate	mg/l	5	26	22	24	28	26	20	\\
Chloride	mg/l	2	12	11	11	11	11	11	250
Chromium	mg/l	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.05
Copper	mg/l	0.001	0.013	0.024	0.014	0.0016	0.016	0.013	1.2
Fluoride	mg/l	0.05	0.92	0.92	0.91	0.91	0.91	0.86	1.4-2.4*
Hardness	mg/l	1	6	5	5	5	5	5	\\
Tin	mg/l	0.01	0.57	0.51	0.53	0.57	0.57	0.45	0.03
Lead	mg/l	0.002	0.003	0.004	<0.002	<0.002	0.002	0.002	0.05
Magnesium	mg/l	0.01	0.42	0.29	0.25	0.24	0.23	0.23	\\
Manganese	mg/l	0.005	0.012	0.01	0.01	0.011	0.011	0.009	0.05
Mercury	mg/l	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.002
Potassium	mg/l	0.5	0.5	0.6	<0.5	<0.5	0.5	<0.5	\\
Selenium	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.05
Silica	mg/l	0.021	19	20	19	20	19	21	\\
Silica Dissolved	mg/l	0.021	22	20	20	21	19	\\	\\
Silver	mg/l	0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	0.05
Sodium	mg/l	0.05	79	76	77	79	81	70	\\
Specific Conductance	umhos/c	1	370	370	370	360	370	350	900
Sulfate	mg/l	2	4.1	3.1	2.6	2.4	2.3	4.9	250
Total Dissolved Solids	mg/l	10	230	240	290	300	280	230	500
Turbidity	N.T.U.	0.1	5.5	5	4.8	4.7	4.7	\\	5
Zinc	mg/l	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	5
Gross Alphas	pCi/l	\\	\\	\\	\\	\\	\\	15.97	15
Gross Beta	pCi/l	\\	\\	\\	\\	\\	\\	4.14	50
Organics**	µ g/l	\\	\\	\\	\\	\\	\\	ND	\\
Oil & Grease	mg/l	1	\\	\\	\\	\\	\\	<1.0	\\
B.O.D.	mg/6	6	\\	\\	\\	\\	\\	<6	\\

Temperature Department Organic analyses by EPA Methods 608, 624, and 625; all results to analytical reports in Appendix D for list of individual analytes.

The KCWD will deliver the Kings River water received from Boswell for either irrigation or groundwater recharge within its district. The KCWD has entered into a water banking agreement with the HEP, and will track the project's groundwater usage on a quarterly basis, all transfers from Boswell, and maintain the "balance" in the water banking agreement.

The Angiola Water District (AWD) receives SWP water from the Tulare Lake Basin Water Storage District, which has a contract with the Department of Water Resources for 118,500 acre-feet of SWP water. AWD has rights to 13,770 acre-feet of this water, in addition to water from other sources. Water amounts actually delivered by AWD during the years 1987 through 1999 are shown in Soil and Water Table 3 that indicates that supplies exceeded its entitlement during this period (118.48 percent). This artifact occurs when local floodwater is available, which is used in place of SWP water. Other water is available to the project from DWR in the form of turn-back irrigation water and interruptable water, which is normally available from January to March. Interruptable water is excess Delta water available during excess flows. Turn-back pool water is water from two SWP aqueduct pools (aqueduct segments between check structures) which is not scheduled for delivery, and which is then made available for sale in the turn-back pool.

In order to supply the project with water during times of drought, the agreements provide several means of ensuring that water will be available to the project. The HEP will purchase 1,500 acre-feet of the AWD entitlement, of which 850 acre-feet will offset the project's water use, and 650 acre-feet will be used to for drought protection during dry years and other purposes during wet years. During wet years, additional water may be banked in advance by Boswell, which can transfer up to 3500 acre-feet to the KCWD under the agreement(s) for either direct use or recharge of groundwater. Water may be delivered directly to agricultural users, which would avoid pumping a similar amount of groundwater. This method of recharge minimizes recharge basin losses from evaporation, out-migration, or other means. Where excess water is delivered and not used for irrigation, it will be directed to KCWD recharge basins.

J.G. Boswell owns Kings River water rights and is able to receive Kings River water through various water companies, including the Tulare Lake Basin Water Storage District. This entitlement is over 100,000 acre-feet per year. Under the agreement, 1,500 acre-feet/year will be transferred to KCWD as an exchange of water rights purchased by the HEP, which is about 1.5 percent of the Boswell's Kings River entitlement. The Boswell water right has historically received 100 percent of its allocation, which provides assurance that the obligations under the agreement will be satisfied and all project-related groundwater will be mitigated. All of the agreements are coterminous with the SWP Table A entitlement purchased by the project and are permanent (in perpetuity).

WASTEWATER DISCHARGE

A wastewater stream of approximately 86 gallons per minute (annual average) consisting of process and sanitary wastewater will be discharged to the City of

Hanford's sanitary sewer system (POTW). Laboratory analyses provided by the Applicant indicates that the wastewater stream discharged to the POTW will be in compliance with the effluent limits contained in the Hanford Municipal code and GWF's existing Significant Industrial User Permit.

**Soil and Water Table 3
ANGIOLA WATER DISTRICT
SUMMARY OF STATE WATER PROJECT DELIVERIES
1987 - 1999**

YEAR	ENTITLEMENT (acre-feet)			DELIVERIES (acre-feet)						
CALENDAR YEAR	SCHEDULE ENTITLEMENT	APPROVED (%)	APPROVED ENTITLEMENT (A.F.)	REQUESTED TABLE A	TABLE A CARRYOVER	AVAILABLE UNUSED TABLE A	INTERUPTIBLE WATER	TURNBACK POOL	OTHER WATER	TOTAL STATE PROJECT SUPPLIES
1987	13,863	100.00%	13,863	141,953	0	1,910	0	0	5,201	19,064
1988	13,863	100.00%	13,863	10,750	0	1,109	0	0	17	11,876
1989	13,863	100.00%	13,863	12,724	2,004	1,004	0	0	0	15,732
1990	13,863	50.00%	6,932	6,744	135	183	0	0	0	7,062
1991	13,863	0.00%	0	0	2	0	0	0	714	719
1992	13,863	45.00%	6,250	5,699	0	0	0	0	0	5,699
1993	13,863	100.00%	13,863	2,137	551	11,726	0	0	0	14,414
1994	13,863	50.00%	6,932	4,579	0	1	3,117	0	0	7,697
1995	13,863	100.00%	13,863	11,825	2,352	0	3,041	0	0	17,218
1996	13,863	100.00%	13,863	12,398	2,038	1,465	3,741	18,577	0	38,219
1997	13,889	100.00%	13,889	9,243	0	4,646	251	0	0	14,140
1998	13,889	100.00%	13,889	5,168	0	8,721	71	0	0	13,960
1999	13,770	100.00%	13,770	13,770	0	0	21,365	11,163	0	46,298
				106,990	7,085	30,764	31,586	29,740	5,932	212,097
Average Annual Supply 16,315 Percent of Table A 118.48%										

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?		X		
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?		X		
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		X		
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?		X		
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?		X		
f) Otherwise substantially degrade water quality?		X		
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY -- Would the project:				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X

DISCUSSION OF IMPACTS

A. Less than Significant With Mitigation Incorporated

The City has indicated by letter (City of Hanford, August 9, 2000) that the POTW has sufficient capacity to treat and dispose of the additional wastewater discharge from the proposed project. An Industrial Discharge Permit will be issued in accordance with the City's Pre-Treatment Program to GWF Power Systems as either a new permit or an amended permit for the existing wastewater discharge. The project will be defined as a categorical discharger in accordance with federal and State regulations, and the discharge will be consistent with the City of Hanford's POTW WDRs issued by the CVRWQCB.

B. Less than Significant With Mitigation Incorporated

Full mitigation for the water used by the project will be accomplished through the purchase of SWP water as described above in "HEP Water Supply". Through both the purchase of water from outside the use area, and by using water exchange and groundwater banking agreements, groundwater pumping by other users in the groundwater basin may also be decreased since the water purchased from the SWP may be used directly for agricultural purposes, which would result in less pumping of groundwater to meet these needs. The net groundwater available would not change with the groundwater use mitigation plan proposed by the HEP, and in non-drought years may actually be increased. Any regional groundwater impacts will be mitigated by the by the agreements proposed by the project.

Because 1,500 acre-feet of water will be purchased from the SWP annually, and only 850 acre-feet will be used by the project, this advance banking of water will not only provide for the project's water needs during drought conditions, but in normal water years will produce a surplus amount of water over that normally available in the basin. An existing well constructed in 1998 will be used to provide water to the project. The well may be classified as a deep industrial supply well with a total depth of 1,490 feet and screened intervals located below the Corcoran clay layer (420-500 below ground surface). Only one similarly constructed industrial well is located within one mile of the project well (Del Monte-located one mile to the south) and is completed to a depth of 1,500 feet. The screened intervals of this well are located below the Corcoran clay layer. The groundwater gradient in the area is 0.002 ft/ft to the southwest. Interference with this well is not likely to be significant

based on the information supplied by the HEP in response to Staff Data Requests 75-77.

While Staff concludes that well interference is not a significant issue for HEP, Staff believes the well interference analysis provided by the Applicant is inadequate (Linda Bond 2001, email communication from Linda Bond to Richard Sapudar on 1/9/01). The analysis is based on a time period of 1 day. It often takes months of years for a drawdown cone of depression to fully develop, depending on the characteristics of the aquifer; using a time period of 1 day significantly underestimates drawdown. The calculations also incorporate recharge, which is inappropriate because recharge would occur regardless of the project, and therefore should be considered in the baseline conditions. The Applicant reduces drawdown by 30% by incorporating recharge. Similarly, drawdown is reduced by 10% for well interference from existing wells, which would occur regardless of the project.

Staff also concludes that at a radius of 3,622 feet, which is defined as the radius of influence, the radius from the well past which no influence should be exerted upon groundwater resources, there will be drawdown of more than 20 feet (Soil and Water Table 4). Whether or not that drawdown is significant there would depend on the bowl settings and other specifications of the existing wells that would be affected.

Soil and Water Table 4

Hanford Energy Park Well Interference Analysis

Staff used Applicant provided data.

Jacob Straight-Line Method

$s = (2.3Q/4\pi T) \log_{10}(2.25Tt/Srr)$ (consistent units)

Theis Equation

$u = r^2 S / 4Tt$
 $s = (Q/4\pi T) W(u)$

	Applicant Calculations		Staff Calculations		
	(1 day)		(1 year)	(30 years)	
Project Water Use (Q) (cu ft/day)	101099		101099	101099	
Radius of Influence (r) (ft)*	3622		3622	3622	
Transmissivity (T) (sq ft/day)	2880		2880	2880	
Storativity (S) (dim)	0.0001		0.0001	0.0001	
Time (t) (days)	1		365	10957.5	
Drawdown (s) (ft)			4	21	30

* Applicant calculated radius of influence from the project well at the end of one day.

Other wells in vicinity of the project well are reported to be agricultural, with the possibility of some domestic wells being present. The Applicant's analysis also neglected the effects of project pumping on these overlying, shallow wells. However, based on the reported layer of Corcoran Clay, Staff can reasonably assume that impacts to shallow wells will be mitigated by the surface water recharge plan (Bond 2001).

C. Less Than Significant With Mitigation Incorporated

Three to 5 acres of land will be disturbed during construction of the facility. Best management practices (BMPs) will be implemented to control erosion during construction activities, and will be described in the storm water pollution prevention

plan (SWPPP) required by the General Storm Water Permit for Construction, which will include the following measures:

- BMPs to minimize erosion prior to construction and implement the BMPs during and after construction. Surface soil protection may include the use of mulches, synthetic netting material, riprap, and the compacting of native soil.
- Conduct all construction activities in accordance with California's General Industrial Storm Water Permit for Construction Sites, including the erosion control measures in the SWPPP and BMPs to reduce erosion and the transport of increased suspended sediment from construction areas.
- In the construction area soil should be graded and compacted to ensure that soil is not left in irregular piles that are more susceptible to water and wind erosion. Seeding will be performed in the areas where natural vegetation has been distressed or removed by construction activity.

The grading for construction of the HEP will alter the existing drainage patterns on the HEP site to ensure that storm water runoff during the operations and maintenance phase is confined within the HEP site and drained to an existing evaporation/percolation basin at the existing GWF Hanford cogeneration plant. The other areas that will be disturbed for the construction of the linear facilities will have their drainage patterns reestablished after construction. Existing roadways will be used to the maximum extent possible. If additional roadways are necessary, they will be sited and graded to minimize potential disturbance to erosion and runoff patterns. Best engineering management practices and drainage control will be implemented to minimized impacts from construction activities. Erosion and sediment controls will be implemented and BMPs will achieve compliance with the NPDES Storm Water General Permit for Storm Water Discharge Associated with Construction Activity and all other applicable LORS.

The Applicant has indicated that adequate sedimentation and erosion controls will be employed, but has not provided a Stormwater and Erosion Control for either the construction of operational phase of the project or the associated linear facilities that includes transmission lines and pipelines. The Applicant will be required to provide these documents prior to the start of construction.

D. Less Than Significant Impact With Mitigation Incorporated

Drainage at the HEP site has also been designed to prevent flooding of permanent facilities and roads, and the system design will also follow best management practices. The stormwater runoff that is collected from outside bermed or graded storm water collection areas (uncontaminated runoff) will be allowed to follow natural drainage patterns. The California General Permit for Discharges of Storm Water Associated with Industrial Activity and associated monitoring and reporting requirements do not apply to the HEP since the facility does not discharge storm water to the waters of the United States, and the permit expressly exempts facilities disposing of storm water to evaporation or percolation ponds.

E. Less Than Significant Impact With Mitigation Incorporated

The storm water flow associated with industrial activity at the existing GWF cogeneration plant is controlled on-site. The area inside the fenceline is bermed and graded to direct stormwater runoff to a drainage system that discharges to an on-site evaporation/percolation pond. The proposed HEP site will also be bermed and graded, and storm water runoff from the HEP site will also be directed to the existing on-site evaporation/percolation pond, which will be enlarged to accommodate the increased storm water flow. The drainage systems for the HEP site have been designed for the storm water flow resulting from a maximum 25-year, 24-hour rainfall event (2.-2.1 inches).

F. Less Than Significant Impact

The project's waste will be discharged in accordance with applicable laws; no impacts to water quality are expected.

- G-I.** The power plant footprint is not located in a 100-year flood zone as it is located in zone "X," an area determined to be outside of the 500-year flood plain as depicted on the Federal Emergency Management Agency Flood Insurance Rate Map sheet no. 060086-0075 B panel no. 0075. Minimum grade for the power plant area will be 1 percent and all drainage will be directed away from buildings within the footprint. A storm water retention pond is proposed to be constructed on site. The 25-year 24-hour storm event precipitation amount is 2.1 inches (NOAA 1973). Run-off during a 25-year 24-hour storm event should not overwhelm the capacity of the proposed surface water drainage system.

CUMULATIVE IMPACTS

Staff concludes there are no significant cumulative impacts.

CONCLUSIONS

Staff has determined the proposed project will result in less than significant impacts to the public or the environment if the suggested mitigation measures and the following conditions of exemption are implemented.

PROPOSED CONDITIONS OF EXEMPTION

The following conditions have been developed for the project:

HYDROLOGY & WATER 1: Prior to beginning any site mobilization, the project owner shall obtain Energy Commission staff approval for a Storm Water Pollution Prevention Plan (SWPPP) as required under the General Storm Water Construction Activity Permit for the project.

Verification: At least thirty days prior to the start of any site mobilization, the project owner will submit a copy of the Storm Water Pollution Prevention Plan (SWPPP) to the Energy Commission Compliance Project Manager (CPM) for

review and approval. Approval of the plan by the CPM must be received prior to the initiation of any site mobilization activities.

HYDROLOGY & WATER 2: Prior to beginning any site mobilization activities, the project owner shall obtain staff approval for a final erosion control and revegetation plan that addresses all project elements. The final plan to be submitted for staff's approval shall contain all the elements of the draft plan with changes made to address any staff comments and the final design of the project.

Verification: The erosion control and revegetation plan shall be submitted to the CPM no later than thirty days prior to start of any site mobilization. Approval of the final plan by the CPM must be received prior to the initiation of any site mobilization activities.

HYDROLOGY & WATER 3: During project operation the project owner will not discharge any stormwater offsite. All stormwater will be collected and directed to the onsite evaporation/infiltration basin. Any stormwater leaving the site during commercial operation will require a General Industrial Activity Storm Water Permit and a Storm Water Pollution Prevention Plan (SWPPP). Approval for the final Industrial Activities SWPPP must be obtained from Energy Commission staff prior to commercial operation and/or offsite discharge of stormwater.

Verification: Should stormwater be discharged off site, the project owner will submit to the CPM a copy of the Storm Water Pollution Prevention Plan (SWPPP) prepared under the requirements of the General Industrial Activity Storm Water Permit at least 30 days prior to the start of commercial operation and/or offsite stormwater discharge. The final plan shall contain all the elements of the draft plan with changes made to address staff comments and the final design of the project.

HYDROLOGY & WATER 4: The HEP will mitigate all use of groundwater as described in SPPE Section 8.14, and in the Applicant Responses to Staff Data Requests 75 through 91. This Water Mitigation Plan will include the following components:

1. The purchase agreement for 1,500 acre-feet of Table A Entitlement SWP water between the Angiola Water District and GWF Power Systems.
2. The agreement between the Tulare Lake Basin Water Storage District and GWF which grants GWF the right to utilize the District's facilities to deliver and convey the 1,500 acre-feet of water from the SWP to J.G Boswell.
3. The exchange agreement between J.G. Boswell and GWF which allows the 1,500 acre-feet of SWP water owned by GWF to be delivered to J.G. Boswell in exchange for 1,500 acre-feet of J.G. Boswell Kings River entitlement.

4. The water banking and mitigation agreement between KCWD and GWF allows the 1,500 acre-feet of Boswell Kings River Entitlement to be delivered to the KCWD on behalf of GWF.

Verification: The project owner will submit the complete Water Mitigation Plan at least 90 days prior to the start of operation. The Water Mitigation Plan will discuss all terms and conditions and all parties involved the agreement, and contain copies of all agreements executed as part of the Water Mitigation Plan. Any changes made to the Water Mitigation Plan will be provided to the CPM for review at least 90-days prior to the effective date of the proposed change. The Water Mitigation Plan will remain in effect for the life of the Project, and the project will not operate without the Water Mitigation Plan in effect.

HYDROLOGY & WATER 5: The project owner will record on a monthly basis the amount of groundwater pumped by the project. This information will be supplied to the Energy Commission and the Kings County Water District.

Verification: The project owner will submit a groundwater use summary to both the CPM and the KCWD on an annual basis for the life of the project. The annual summary will include the monthly range, monthly average, and total groundwater use by the project in both gallons-per-minute and acre-feet. For subsequent years the annual summary will also include the yearly range and yearly average groundwater use by the project. Any significant changes in the water supply for the project during construction or operation of the plant will be noticed in writing to the CPM at least 90-days prior to the effective date of the proposed change.

HYDROLOGY & WATER 6: The project owner will obtain a final Industrial Discharge Permit prepared in accordance with the City of Hanford's Pre-Treatment Program for the project's wastewater discharge to the City's POTW. The project will not operate without a valid permit in place.

Verification: The Applicant will obtain and provide a copy of final Industrial Discharge Permit issued by the City of Hanford for the project's wastewater discharge to the POTW to the CPM at least 60-days prior to the POTW receiving any wastewater discharge from the project. Any change to either the chemical or physical parameters or volume of the wastewater discharge permitted by the Industrial Discharge will be noticed in writing to both the CPM and the City of Hanford during both construction and/or operation. The project owner will notify the Energy Commission in writing of any changes to the Industrial Discharge Permit, either instituted by the project owner or the City of Hanford, including any permit renewal. The project owner will provide the CPM with the annual monitoring report summary required by the Industrial Discharge Permit, and will fully explain any violations, exceedances, enforcement actions, and remedial actions.

REFERENCES

CEC (California Energy Commission) 2000. Hanford Energy Park Staff Issue Identification Report. Submitted to the California Energy Commission on August 21, 2000.

GWF Power Systems Company, Inc. 2000a. Hanford Energy Park – Application for Small Power Plant Exemption. Submitted to the California Energy Commission on May 19, 2000.

GWF Power Systems Company, Inc. 2000b. Responses to Data Requests. Submitted to the California Energy Commission in August, 2000.

LAND USE AND RECREATION

Testimony of Patrick Angell

INTRODUCTION

The land use analysis of the Hanford Energy Park Project focuses on two main issues: the project's consistency with local land use plans, ordinances and policies; and the project's compatibility with existing and planned land uses.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The various components of the proposed project are subject, as applicable, to the provisions of the City of Hanford General Plan, City of Hanford Zoning Ordinance, Performance and Development Standards for the Kings Industrial Park adopted by the City of Hanford Redevelopment Agency, Kings County General Plan, and the Kings County Zoning Ordinance.

CITY OF HANFORD GENERAL PLAN

The proposed project is located in the Kings Industrial Park, a 1,000-acre industrial park located at the southern edge of the City of Hanford. The project site is designated HI-Heavy Industrial in the General Plan. The HI-Heavy Industrial designation provides for industrial parks, manufacturing, truck terminals, utility operations, and similar activities. The Kings Industrial Park use is consistent with this General Plan designation, and the expansion of the electrical generating facility would be consistent with the provisions of the HI standards. The General Plan policies that are applicable to the proposed project are set forth in Appendix A.

CITY OF HANFORD ZONING ORDINANCE

The proposed project site is located in the Kings Industrial Park, which is zoned Heavy Industrial (HI). This proposed site is consistent with its zoning. Chapter 17.30 of the Zoning Code contains provisions relating to the industrial zones, including general development standards, setbacks, off-street parking, and similar requirements. The project, when constructed, will be consistent with Chapter 17.30 of the Zoning Code.

CITY OF HANFORD REDEVELOPMENT AGENCY

KINGS INDUSTRIAL PARK PERFORMANCE AND DEVELOPMENT STANDARDS

The Kings Industrial Park is located within the City of Hanford, and within the boundaries of the City of Hanford Redevelopment Agency. Properties located within the Kings Industrial Park, including the proposed project site, are subject to the Kings Industrial Park Performance and Development Standards, adopted by the Redevelopment Agency for the industrial park. The Performance and Development Standards provide that the proposed project would be subject to project review as provided in the Hanford Municipal Code. The purpose of the project review process is to enable the Community Development Department to determine whether the

project is in conformity with the intent and provisions of the Zoning Code, and to guide the building official in the issuance of building permits.

If a recommendation for project approval is made by the Community Development Department following the project review process, the Department is also required to state the conditions of approval necessary to protect the public health, safety and general welfare. In addition, the Department is required to make the following findings A. All applicable provisions of the Zoning Code have been complied with; B. Project improvements such as facilities and improvements, vehicular ingress and egress, wall, drainage and refuse enclosures have been so arranged that traffic congestion is avoided, pedestrian and vehicular safety and welfare are protected, and there will be no adverse effects on surrounding property; C. The proposed lighting is so arranged as to deflect the light away from adjoining properties; D. That the proposed signs will comply with the Sign Ordinance (Chapter 17.44); and E. Adequate provisions have been made to reduce adverse or potentially significant environmental impacts to acceptable levels.

The Energy Commission is acting as the lead agency pursuant to the California Environmental Quality Act (CEQA) with regard to the project. The City would, as part of its responsibilities in project review, consider the environmental document prepared by the Energy Commission.

The following provisions of the Kings Industrial Park Performance and Development Standards are relevant for the purpose of evaluating the project's compliance with the standards. The proposed project would be required to comply with the relevant development standards:

- Industrial and related uses must conform to all of the provisions and purposes of the Hanford Zoning Ordinance and the Performance and Development Standards.(IV)
- Industrial projects must undergo Site Plan Review procedures in accordance with Title 9, Chapter 4, Article 19 of the Hanford Municipal Code. (IV)
- No land or building shall be used or occupied in any manner that would create any dangerous, noxious, or otherwise objectionable elements. The determination of compliance shall be made at the location of the use creating any such element, with the measurement for enforcement purposes being made at the lot line. (V,C,1-2)
- New industrial uses must meet two types of noise standards. The first is a property line standard applied at the source, and the second is a receiver-based standard applied at existing noise-sensitive land uses. (V, C, 2)
- No vibration (other than from transportation facilities or temporary construction work) shall be permitted which is discernable by the average person without instruments at the property line of the use producing such vibration. (V,B)
- No odorous emissions shall be permitted in such quantities as to be readily discernable by the average person at the property line of the use producing such emissions. (V, C)

- No direct or sky-reflected glare, whether from flood lights or from high temperature processes such as combustion, welding, or otherwise shall be permitted which could create traffic accidents or adversely affect the use or value of adjoining property, when measured at the property line of the use creating such glare or light. (V, D)
- Devices which transmit radio frequency energy shall be operated so as not to cause interference with any activity carried on beyond the property line upon which the device is located. (V,E)
- All industries must provide adequate fire and toxic hazard prevention, safety, and suppression devices and equipment that are standard in the industry at the point where toxic, flammable, or explosive material is used or stored. (V, F)
- All industries must have an Emergency Contingency Plan, approved by the City Fire Chief, on file with all appropriate agencies as identified by the Kings County Office of Emergency Services. (V, F)
- All industrial uses shall be subject to the rules, regulations, and prohibitions of the San Joaquin Unified Air Pollution Control District. (V, G)
- No discharges or materials that could contaminate any water supply, interfere with sewage treatment, or otherwise cause the emission of dangerous or offensive elements into any public sewer, private sewage disposal system, stream, or into the ground shall be permitted unless approved by and in accordance with the state Department of Health Services, the Kings County Health Department, the City of Hanford, and the Regional Water Quality Control Board. (V, H)
- Any industry having a cross-connection between the City's public water system and an auxiliary water supply must meet the requirements of the California Administrative Code, Title 17, Section 7583, and Chapter 7 of Title 6 of the Hanford Municipal Code, Control of Backflow and Cross-Connections. (V, I)
- No structural height limitation is applicable. The building height must not exceed a 1:1 ratio between the distance from the front property line to the structural height. (VI, D)
- There must be a 50-foot setback along the front property line, at least the first 20 feet of which must be landscaped and continuously maintained, and a 20-foot setback along the sides and rear of the property. (VI, E, 2)
- The Floor to Area Ratio cannot exceed 50%. (VI, G)

KINGS COUNTY GENERAL PLAN

The proposed project is consistent with the Kings County General Plan. The General Plan policies that are applicable to the proposed project are set forth in Appendix A.

KINGS COUNTY ZONING ORDINANCE

The alternative electrical switchyard site identified in the SPPE Application is now the preferred switchyard site, and would be located at the northeast corner of the

intersection of the Jackson Avenue and 11Th. Avenue The proposed electrical transmission route and switchyard site would be located on property within portions of the County having a Heavy Industry-MH zoning designation. The switchyard location originally proposed at the southwest corner of Jackson Avenue and the railroad right-of-way, and now considered the alternative location, is zoned General Agriculture-20 (AG-20).

Section 1403 of the County Zoning Ordinance, which sets forth the zoning standards for the MH zone district, provides that all permitted uses within the MH zone district require site plan review. Permitted uses subject to site plan review include all uses in the ML Light Industrial district, which in turn allows uses permitted in the AL Light Agricultural zone district as listed in sections 404.B and 404.C.

Section 404.B.8 includes the following as a permitted use:

Public utility and public service structures including electric transmission and distribution substations, gas regulator stations, communications equipment buildings, public service pumping stations and reservoirs. (Zoning Ordinance, Section 404.B.8)

No permit would be required for the electrical transmission line routes or switchyard site now proposed other than building permits or other ministerial permits. Site plan review includes review by the various Kings County departments, and any other agencies that may have relevant input.

The minimum parcel size in the MH zone district is one acre (Section 1407). Creation of a one-acre parcel through a parcel map would be consistent with the Zoning Ordinance requirements for minimum parcel size.

The construction and operation of the electrical switchyard at the location originally proposed in the application would have required consultation with the County Agricultural Commissioner, the County Farm and Home Advisor, and others, and the making of findings as required by Section 1904 and 1908 of the County Zoning Ordinance. With the selection of the switchyard site at the corner of Jackson Avenue and 11th Avenue as the proposed switchyard site, this procedure will not be required.

Kings County would not require a permit for the construction, operation or maintenance of the proposed gas pipeline route within County jurisdiction. See Section 402.B.11 of the Zoning Ordinance, referenced above.

SETTING

AFFECTED JURISDICTIONS

The proposed Hanford Energy Park would be located adjacent to an existing GWF Power Systems (GWF) facility in the Kings Industrial Park. The site is located within

the City limits of Hanford, approximately three miles south of downtown Hanford. The existing GWF facility occupies approximately five acres within the Kings Industrial Park; the proposed project would occupy an additional five acres adjacent to the existing site on the north and east of the existing facility.

In addition to proposing the construction of an expanded physical plant for the generation of electricity and steam, the application proposes the construction of electric transmission lines for the purpose of transmission of electric power to the statewide grid, and a pipeline to supply natural gas for the expanded operation.

The proposed electric transmission route would connect with an existing Pacific Gas & Electric (PG&E) transmission line south of the expanded facility. The proposed line will be approximately 1.36 miles in length. The electrical transmission line route would exit west along Idaho Avenue from the HEP switchyard, and turn south along the eastside of 11th Avenue, where the proposed switchyard would be constructed at the northeast corner of Jackson Avenue and 11th Avenue.

The proposed gas pipeline route would be routed west and north of the expanded facility. The gas pipeline route is approximately 2.8 miles in length, connecting to a Southern California Gas Company transmission pipeline near the intersection of 11th Avenue and Hanford-Armona Road. 2.4 miles of the gas pipeline route is located within a City public utility easement on the west side of 11th Avenue. As the pipeline route approaches Hanford-Armona Road, adjacent uses become residential in character.

The gas pipeline route would be routed north of the site, with agricultural, industrial, and residential uses on the west, and industrial and residential uses on the east.

Neither construction nor operation of the proposed project would require the use of state or federal land.

PROJECT VICINITY

The site of the proposed expansion is located adjacent to the existing GWF facility in an existing industrial park, approximately three miles south of downtown Hanford. Agricultural or vacant parcels border the industrial park itself. The nearest residence is located approximately three-fourths of a mile from the GWF existing facility.

The existing uses in the industrial park include the existing GWF electrical and steam generation facility and various industrial uses. Located immediately south of the site for the proposed project, across Idaho Avenue, and outside the boundaries of the industrial park, is the Pirelli tire manufacturing facility. The Del Monte processing facility is located southeast of the proposed project.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING -- Would the project:				
a) Physically divide an established community?			X	
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X	
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				X

DISCUSSION OF IMPACTS

LAND USE AND PLANNING

A. Less Than Significant Impact

The expanded facility would be located in an area within the City of Hanford, designated under the General Plan for industrial development. The expanded facility would comply with existing zoning, and would be an extension of the existing operation. The City of Hanford is actively seeking tenants for the Kings Industrial Park. The proposed facility would produce steam that could be marketed to other industrial users in the vicinity of the project, and the availability of such steam could be a positive factor in inducing new industrial users to locate in Kings Industrial Park. The Kings Industrial Park is designated for industrial use in the City's General Plan and Zoning Ordinance. It is reasonable to expect that any new uses would be

industrial in character, and thus consistent with the established development in the project vicinity. Any new uses in the Kings Industrial Park would be required to comply with the existing performance and development standards established for the industrial park, adopted by the City of Hanford Redevelopment Agency, and enforced by the City of Hanford.

The proposed electrical transmission routes would be located on Idaho Avenue and vacant parcels to the southwest of the project site. Construction and operation of the electrical transmission facilities would be consistent with established zoning, and would not divide or disrupt existing land uses or an established community.

The project includes construction and operation of a one-acre parcel as a switchyard. The switchyard would be located northeast corner of the intersection of Jackson Avenue and 11Th Avenue. No residences are located in the immediate vicinity of this location. Neither construction nor operation of the switchyard at the location would have the effect of disrupting existing land uses or travel patterns.

The proposed gas pipeline route would utilize an existing public utility right-of-way. Construction would involve temporary disruption to neighboring uses, which include agriculture and residential uses. No aboveground structures would be constructed, and operation of the pipeline would not preclude existing or planned uses in the vicinity of the pipeline. Construction and operation of the pipeline would not disrupt or divide an established community.

The General Plans for both the City of Hanford and Kings County emphasize cooperation in planning for future land uses near urbanized areas within City limits. The proposed project would not divide an established community, and the impact is less than significant.

B. Less Than Significant Impact

The proposed project would be consistent with the General Plan and zoning designations applicable within the City and County jurisdictions. The impact would, therefore, be less than significant.

C. No Impact

There are no habitat conservation plans or natural community conservation plans adopted by the City of Hanford, Kings County, or other jurisdictions, that would be affected by the proposed project, and the proposed project would therefore have no impact regarding this issue.

RECREATION

A. Less Than Significant Impact

B. No Impact

CUMULATIVE IMPACTS

Staff concludes there are no cumulative impacts

CONCLUSIONS

The project would not physically divide an established community, conflict with any applicable land use plan, policy, or regulation, and would not conflict with any applicable habitat conservation plan. The proposed use would be consistent with the provisions of the City and County General Plans and zoning ordinances. The impacts for Land Use and Planning are, therefore, less than significant.

The project would not significantly increase the use of public parks or recreational facilities, nor would it necessitate the construction or expansion of recreational facilities. The impacts for Recreation are, therefore, less than significant.

PROPOSED CONDITIONS OF EXEMPTION

None proposed.

REFERENCES

City of Hanford General Plan, 1994.

City of Hanford Zoning Ordinance, 1994, Title 17, Chapter 17.02.

Kings County General Plan, updated 1998.

Kings County Zoning Ordinance, updated 2000.

City of Hanford Redevelopment Agency, Kings Industrial Park Performance and Development Standards.

City of Hanford, Zoning Ordinance and Industrial Park Performance and Development Standards, City of Hanford Municipal Code Amendment No. 2000-01.

Kings County, Telephone conference; Sandy Roper, July 14, 2000.

Kings County, Telephone conference; Kings County Local Agency Formation Commission; Steve Sopp, Assistant Executive Director, July 28, 2000.

Kings County, Meeting; Rick Williams, Planner, Kings County Planning Department; August 3, 2000.

Kings County, Telephone conference; Kings County Agricultural Commissioner's Office; Tim Niswander, Assistant Commissioner; August 7, 2000.

Kings County, Telephone conference; Rick Williams, Planner, Kings County Planning Department; August 8, 2000.

City of Hanford, Telephone conference; Jim Beath, Community Development Director; July 14, 2000.

City of Hanford, Meeting; Jim Beath, Community Development Director, August 3, 2000.

City of Hanford, Kings Industrial Park Environmental Impact Report, August 1974.

NOISE

Testimony of Thomas Murphy

INTRODUCTION

This section evaluates the potential noise effects associated with the construction and operation of the Hanford Energy Park (HEP), which would be located in Hanford, California. As described in the SPPE, the proposed project would be to construct and operate a 98.7-megawatt natural gas-fired combined cycle power plant. In addition to constructing the subject power plant, the proposed project also includes constructing 1.36 miles of a new 115 kV transmission line, which would connect to the Pacific Gas and Electric Company (PG&E) 115-kV Henrietta-Kingsburg transmission line. Natural gas for the HEP will be delivered via approximately 2.8 miles of a new 16-inch pipeline that will connect to an existing Southern California Gas Company transmission pipeline.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. Table 1 lists permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed; assuring that workers are made aware of overexposure to noise; and periodically testing the workers' hearing to detect any degradation. It should be noted that there are no federal laws governing offsite (community) noise.

NOISE: Table 1
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: OSHA Regulation

STATE

California Government Code Section 65302(f) requires that a noise element be prepared as part of the General Plan to address foreseeable noise problems. In addition, Title 4, California Code of Regulations has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure.

CAL-OSHA

Cal-OSHA has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards described above.

LOCAL

The Kings Industrial Park Performance and Development Standards provide specific criteria to ensure that industrial development within the industrial park is consistent with the policies and goals of the City of Hanford. Specific noise standards have been developed for the planned industrial park. The two types of noise standards include property line and receiver-based standards. Table 2 lists the local standards for the Kings Industrial Park.

Table 2 Kings Industrial Park Noise Standards

Standards	Description		
Property Line Standard	Noise created during anytime of the day or night by non-preempted sources associated with existing or proposed industrial uses shall not exceed a maximum level of 70 dBA at the property line of the industrial use that is producing noise.		
Noise Sensitive Receiver Based Standard	Cumulative Number of Minutes in any-one hour period	Daytime (7a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
	30 minutes	55 DbA	45 dBA
	1 minute	70 DbA	50 dBA

SETTING

The 10-acre HEP site would be located just north of Idaho Avenue, between the existing GWF facility to the west and the Burlington Northern & Santa Fe Railway tracks to the east. The terrain in the general vicinity of the site is essentially flat with scrub vegetation distributed throughout surrounding empty lots. According to Figure 8.4-1 of the Application, the surrounding land uses are all zoned Heavy Industrial (GWF 2000a, Figure 8.4-1).

SENSITIVE RECEPTORS

The closest sensitive receptor is a residence located approximately 3,200 feet to the east of the facility along 10th Avenue. This residential receptor is located within the Kings Industrial Park boundary, and therefore, the standards listed in Table 2 would apply to this receptor. Other residential receptors include the Clark residence

located southeast of the power plant on 10th Avenue and the Davis residence located northwest of the power plant along 11th Avenue.

AMBIENT NOISE LEVELS

A number of long-term and short-term noise surveys were conducted at locations surrounding the HEP Project. The latest long-term survey was conducted on July 27 and 28, 2000 using a Metrosonics Model db 308, Type 2, community noise analyzer. This survey was conducted for a 25-hour period at three locations: 1.) Clark residence located southeast of the facility; 2.) Davis residence located northeast of the facility; and 3.) at the southern facility boundary line, just east of the GWF plant. Noise levels recorded at these locations are listed in Table 3.

Table 3 Long-Term Noise Level Summary (dBA)

Monitoring Location	25 Hour Leq	25 Hour L ₉₀
Clark Residence	54.0	48.0
Davis Residence	50.4	42.9
Eastern Facility Boundary	72.5	59.8

Source: GWF 2000b, Data Responses: Set 2 (48)

In addition to the 25-hour noise survey, short-term measurements were conducted at approximately 25 locations using a Precision (Type 1) Bruel & Kjaer Type 2231 sound level meter with a statistical analyzer. A short-term noise measurement was conducted at the residence at the southwest corner of 10th Avenue and Idaho Avenue. As described above, this is the closest residential receptor to the HEP facility. The results of the measurements indicated that the ambient noise levels were 45.4 Leq and 43.9 L₉₀.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE – Would the project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		
b) Exposure of persons to or generation of excessive ground borne vibration noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the			X	

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
project?				
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the area to excessive noise levels?				X

DISCUSSION OF IMPACTS

A. Less Than Significant Mitigation Incorporated

CONSTRUCTION NOISE

COMMUNITY EFFECTS

Construction noise is a temporary phenomenon; the construction period for the HEP facility is scheduled to last 14 to 16 months (GWF 2000a, Table 8.5-6). Construction of an industrial facility such as a power plant is typically and unavoidably noisier than what is usually permissible under noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours is commonly exempt from enforcement by local ordinances. As a result, construction noise would comply with the local standards. Staff recommends the proposed measures described in Conditions of Exemption **NOISE-1**, **NOISE-2** and **NOISE-8** to further reduce any potential impacts to the community.

WORKER EFFECTS

Normal construction-generated noise levels would range between 70 and 80 dBA at a distance of 100 feet from the construction activity. Therefore, construction workers will be subjected to occasional noise levels above 85 dBA. The State LORS require all noise levels to be limited to 85 dBA at three feet from equipment. If 85 dBA would be exceeded, then warning signs need to be posted and a Hearing Conservation Program implemented. With proper execution of the Hearing Conservation Program, as well as with the implementation of the proposed

measures described in Condition of Exemption **NOISE-3**, no occupational safety impacts are anticipated from construction noise.

OPERATIONAL NOISE

COMMUNITY EFFECTS

The projected noise level from the HEP power plant at the closest residential receptor (SW corner of 10th Avenue and Idaho Avenue) is expected to be approximately 44 dBA Leq (GWF 2000a, Table 8.5-6). Based on the results of the noise survey on July 27 and 28, 2000, this noise level would be below the existing ambient conditions and in compliance with the Kings Industrial Park Noise Standards.

It should be noted that the noise level projection described above did not take into account atmospheric absorption, as well as attenuation from barriers, wind, or temperature gradients. As a result, noise levels at the closest receptor would likely be lower than what is presented in the analysis because of the nearby industrial building that would partially shield noise levels from the power plant. As a result, noise levels associated with power plant operations would be considered less than significant.

Operational related noise levels at the property line are expected to range between 63 and 69 dBA Leq (GWF 2000a, Table 8.5-6). In addition, it is anticipated that the cumulative noise levels from the operation of both power plants would be below 70 dBA Leq. Therefore, the noise generated from the operational phase of the HEP facility is in conformance with the Kings Industrial Park Noise Standards. Staff recommends the implementation of the measures described in Condition of Exemption **NOISE-6** to further reduce any potential impacts to the local community associated with operations.

WORKER EFFECTS

The Applicant recognizes the need to protect plant operating and maintenance personnel from noise hazards, and commits to comply with applicable LORS. A measure to be implemented for noise-related impacts includes a Hearing Conservation Program. With proper execution of the Hearing Conservation Program, as well as the implementation of the proposed measure described in Condition of Exemption **NOISE-7**, no occupational safety impacts are anticipated from operational noise.

B. No Impact

The primary source of vibration noise associated with a power plant is from the operation of the turbines. It is anticipated that the plant's turbines will be maintained in optimal balance to minimize excessive vibration that can cause damage or long term wear. Consequently, no excessive vibration would be experienced by adjacent land uses.

C. Less Than Significant Impact

CONSTRUCTION NOISE

As described above, construction of the power plant is a temporary phenomenon; the construction period for the HEP facility is scheduled to last 14 to 16 month. As a result, noise generated from construction would not cause a substantial permanent increase in ambient noise levels.

OPERATIONAL NOISE

During the operating life, the HEP facility will represent essentially a steady, continuous noise source day and night. The primary noise sources anticipated from the proposed facility include the heat recovery steam generator, the combustion turbine generator package, the steam turbine generator, the cooling towers, boiler feed pumps, the generator step-up transformers, and the circulating water pumps. Secondary noise sources are anticipated to include auxiliary pumps, ventilation fans, motors, valves and compressors. The noise emitted by power plants during normal operations is generally broadband, steady state in nature.

The noise level from the proposed power plant was modeled to evaluate whether the new plant would contribute an incremental increase in noise levels at the nearest residential receptors. All major pieces of equipment were assumed to operate continuously for the purpose of the modeling analysis. The projected HEP noise level at the closest residential receptor (SW corner of 10th Avenue and Idaho Avenue) is expected to be approximately 44 dBA Leq (GWFa 2000, Table 8.5-6). Based on the results of the noise survey on July 27, and 28, 2000, this noise level would be below the existing ambient conditions.

As described above, It should be noted that the noise level projections described above did not take into account atmospheric absorption, as well as attenuation from barriers, wind, or temperature gradients. As a result, noise levels at the closest receptor would likely be lower than what is presented in the analysis because of the nearby industrial building that would partially shield noise levels from the power plant. As a result, noise levels associated with power plant operations would be considered less than significant. Staff recommends the implementation of the measures described in Condition of Exemption **NOISE-6** to further reduce any potential impacts to the local community associated with operations.

LINEAR FACILITIES

The natural gas pipelines would be buried below ground and would not produce any audible noise. All aboveground linear facilities (transmission lines) will not be located near noise sensitive receptors. Thus, there will be no noise impacts associated with linear facilities.

D. Less Than Significant with Mitigation Incorporated

CONSTRUCTION NOISE

COMMUNITY EFFECTS

Construction impacts are generally short-term in nature and usually result from the operation of heavy-duty diesel- and gasoline-powered construction equipment (e.g., backhoes, boom trucks, delivery trucks, compressors). Noise levels were predicted from the construction of the HEP facility using information in the *Power Plant Construction Noise Guide* (Barnes, Miller, and Wood, 1997). Maximum estimated noise levels at the nearest sensitive receptor from construction would range between 36 dBA and 46 dBA, depending on the construction phase. These noise levels would be below the existing ambient noise levels at the receptor. As a result, construction noise would be considered less than significant. Staff recommends the implementation of the measures describe in Conditions of Exemption **NOISE-1**, **NOISE-2**, and **NOISE-8** to further reduce any potential for impacts to the local community associated with construction activities.

STEAM BLOWS

The highest noise levels that would be generated during the construction of the HEP facility would be associated with steam blows. After erection and assembly of the feedwater and steam systems, the piping and tubing that comprises the steam path has accumulated dirt, rust, scale and construction debris such as weld spatter, dropped welding rods and the like. If the plant were started up without thoroughly cleaning out these systems, all this debris would find its way into the steam turbine, quickly destroying the machine.

In order to prevent this, before the steam system is connected to the turbine, the steam line is temporarily routed to the atmosphere. High-pressure steam is then raised in the heat recovery steam generator (HRSG) or a temporary boiler and allowed to escape to the atmosphere through the steam piping. This flushing action, referred to as a steam blow, is quite effective at cleaning out the steam system. A series of short steam blows, lasting two or three minutes each, is performed several times daily over a period of two or three weeks. At the end of this procedure, the steam line is connected to the steam turbine, which is then ready for operation.

These steam blows can produce noise as loud as 130 dBA at a distance of 100 feet. This would attenuate to approximately 100 dBA, an exceedingly disturbing level, at the nearest residence, 3,200 feet in distance (distance the receptor is from the center of the units). In order to minimize disturbance from steam blows, the steam blow piping can be equipped with exhaust silencers that will reduce noise levels by 20 dBA (or more), or to a level of 80 dBA at the nearest residence. This is still an annoying noise level; staff proposes that any high pressure steam blows be muffled with an appropriate silencer, and be performed only during restricted daytime hours (see proposed measures described in Conditions of Exemption **NOISE-4** and **NOISE-5** below) in order to minimize annoyance to residents.

Alternatively, the Applicant may elect to employ a new, quieter steam blow process, variously referred to as QuietBlow™ or Silentsteam™. This method utilizes lower pressure steam over a continuous period of approximately 36 hours. Resulting noise levels reach only about 80 dBA at 100 feet; noise levels at the nearest residence would thus be 50 dBA, slightly higher than the background noise levels.

LINEAR FACILITIES

Construction of the linear facilities (i.e., transmission line and natural gas line) will produce noise at locations near residential receptors. This noise will be noticeable, and possibly annoying, to persons outside their homes at those residences nearest the construction area. This work, however, is only a temporary phenomenon; the work will progress at such a pace that no single receptor will be inconvenienced for more than a few days. As a result, noise levels associated with construction of the linear facilities would be considered less than significant.

OPERATIONAL NOISE

As described above, the HEP facility will represent essentially a steady, continuous noise source day and night. However, occasional short-term increases in noise levels will occur as steam relief valves open to vent pressure, or during startup or shutdown as the plant transitions to and from steady-state operation. At other times, such as when the plant is shut down for lack of dispatch or from maintenance, noise levels will decrease. It is anticipated that the short-term noise levels would not cause any significant impacts.

E. No Impact

In general, the HEP area is not influenced by aircraft noise associated with local airports. Therefore, this criterion is not applicable to the proposed project.

F. No Impact

In general, the HEP area is not influenced by aircraft noise associated with local airports. Therefore, this criterion is not applicable to the proposed project.

CUMULATIVE IMPACTS

Staff concludes there are no cumulative impacts

CONCLUSION

Staff concludes the request for a Small Power Plant Exemption will not significantly impact the public or environment if the suggested mitigation and the proposed conditions of exemption are implemented.

PROPOSED CONDITIONS OF EXEMPTION

The Applicant has developed an overall mitigation strategy to reduce noise impacts to less than significant levels. Mitigation for construction would include making sure that all equipment is fitted with original mufflers and silencers and that the

equipment is maintained in proper operating conditions. Other measures include the adoption of noise control programs and the implementation of noise reducing facilities to cope with construction and operational noise. In addition to the Applicant's overall mitigation strategy, staff proposes the following conditions of certification.

NOISE-1 At least 15 days prior to the start of project-related ground disturbing activities, the project owner shall notify all residents and business owners within one-half mile of the site or adjacent to the pipeline routes, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: The project owner shall transmit to the Compliance Project Manager (CPM) in the first Monthly Construction Report following the start of project-related ground disturbing activities, a statement, signed by the project manager, attesting that the above notification has been performed, and describing the method of that notification. This statement shall also attest that the telephone number has been established and posted at the site.

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints.

Protocol: The project owner or authorized agent shall:

- use the Noise Complaint Resolution Form (see Exhibit 1 for example), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise related to the complaint;
- if the noise is project related, take all feasible measures to reduce the noise at its source; and
- submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the

complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within 30 days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form, or similar instrument, with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 30-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is finally implemented.

NOISE-3 Prior to the start of project-related ground disturbing activities, the project owner shall submit to the CPM for review a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days or a lesser period of time mutually agreed to by the Compliance Project Manager and the project owner, prior to the start of project-related ground disturbing activities, the project owner shall submit to the CPM the above referenced program. The project owner shall make the program available to OSHA upon request.

NOISE-4 If a traditional, high-pressure steam blow process is employed, the project owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 110 dBA measured at a distance of 100 feet. The project owner shall conduct steam blows only during the hours of 8 a.m. to 5 p.m., unless the CPM agrees to longer hours based on a demonstration by the project owner that offsite noise impacts will not cause annoyance. If a low-pressure continuous steam blow process is employed, the project owner shall submit a description of this process, with expected noise levels and projected hours of execution, to the CPM.

Verification: At least 15 days prior to the first high-pressure steam blow, the project owner shall submit to the CPM drawings or other information describing the temporary steam blow silencer and the noise levels expected, and a description of the steam blow schedule. At least 15 days prior to any low-pressure continuous steam blow, the project owner shall submit to the CPM drawings or other information describing the process, including the noise levels expected and the projected time schedule for execution of the process.

NOISE-5 If high pressure steam blows are used, at least 15 days prior to the first steam blow(s), the project owner shall notify all residents or business owners within one mile of the site of the planned steam blow activity, and shall make the notification available to other area residents in an appropriate manner. The notification may be in the form of letters to the area residences, telephone calls, fliers or other effective means. The notification shall include

a description of the purpose and nature of the steam blow(s), the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.

Verification: Within five (5) days of notifying these entities, the project owner shall send a letter to the CPM confirming that they have been notified of the planned steam blow activities, including a description of the method(s) of that notification.

NOISE-6 Within 30 days of the project first achieving an output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey, utilizing the same monitoring site at the property boundary. The survey shall also include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints. If the results from the survey indicate that the project noise level (with both GWF and HEP operating at the same time) at the property boundary is greater than 72 dBA Leq¹, additional mitigation measures shall be implemented to reduce noise to a level of compliance with this limit, or a report (including noise measurements) shall be submitted documenting that HEP is meeting the vendor's guaranteed noise limit of 65 dBA Leq at a distance of 400 feet.

Verification: Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. If additional mitigation measures are necessary within 30 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

NOISE-7 Within 30 days after the facility is in full operation, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure. The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

¹ 72 dBA assumes that other noise sources (Burlington Northern & Santa Fe Railway) are contributing to the ambient noise levels along the HEP property boundary. It is assumed that the cumulative noise level contribution from the operation of the GWF and HEP power plants would be <70 dBA at the property line.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request.

NOISE-8 Noisy construction work (that which causes offsite annoyance, as evidenced by the filing of a legitimate noise complaint) shall be restricted to the times of day delineated below:

High-pressure steam blows:	8 a.m. to 5 p.m.
Other Noisy Work:	7 a.m. to 7 p.m.

Verification: The project owner shall transmit to the CPM in the first Monthly Construction Report a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Hanford Energy Park (00-SPPE-1)		
NOISE COMPLAINT LOG NUMBER _____		
Complainant's name and address:		
Phone number: _____		
Date complaint received: _____ Time complaint received: _____		
Nature of noise complaint:		
Definition of problem after investigation by plant personnel:		
Date complainant first contacted: _____		
Initial noise levels at 3 feet from noise source _____	dBA	Date: _____
Initial noise levels at complainant's property: _____	dBA	Date: _____
Final noise levels at 3 feet from noise source: _____	dBA	Date: _____
Final noise levels at complainant's property: _____	dBA	Date: _____
Description of corrective measures taken:		
Complainant's signature: _____ Date: _____		
Approximate installed cost of corrective measures: \$ _____		
Date installation completed: _____		
Date first letter sent to complainant: _____ (copy attached)		
Date final letter sent to complainant: _____ (copy attached)		
This information is certified to be correct:		
Plant Manager's Signature: _____		

(Attach additional pages and supporting documentation, as required).

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PUBLIC HEALTH

Obed Odoemelam

INTRODUCTION

Operating the proposed Hanford Energy Park (HEP) would create combustion products and possibly expose the general public and workers to these pollutants as well as the toxic chemicals associated with other aspects of facility operations. The purpose of this public health analysis is to determine whether a significant health risk would result from public exposure to these chemicals and combustion by-products routinely emitted during project operations.

The primary concern in this section is exposure to pollutants for which no air quality standards have been established. These are known as noncriteria pollutants, toxic air pollutants, or air toxics. Those for which ambient air quality standards have been established are known as criteria pollutants and are assessed in the Air Quality section.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

The Clean Air Act of 1970 (42 U.S.C., section 7401 et seq.) required establishment of ambient air quality standards to protect the public from the effects of air pollutants. These standards have been established by the United States Environmental Protection Agency (EPA) for the major air pollutants: nitrogen dioxide, ozone, sulfur dioxide, carbon monoxide, sulfates, and particulate matter with a diameter of 10 micron or less (PM10), and lead.

STATE

California Health and Safety Code section 39606 requires the California Air Resources Board (ARB) to establish California's ambient air quality standards to reflect the California-specific conditions that influence its air quality. Such standards have been established by the ARB for ozone, carbon monoxide, sulfur dioxide, PM10, lead, hydrogen sulfide, vinyl chloride and nitrogen dioxide. The same biological mechanisms underlie some of the health effects of most of these criteria pollutants as well as the noncriteria pollutants. The California standards are listed together with the corresponding federal standards in the Air Quality section.

California Health and Safety Code section 41700 states that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause or have a natural tendency to cause injury or damage business or property."

The California Health and Safety Code section 39650 et seq. mandates that the California Environmental Protection Agency (Cal-EPA) establish safe exposure limits for toxic, noncriteria air pollutants and identify the best available methods for their control. These laws also require that the new source review rules for each air district include regulations establishing procedures to control the emission of these pollutants. The toxic emissions from natural gas combustion are listed in ARB's April 11, 1996 California Toxic Emissions Factors (CATEF) database for natural gas-fired combustion turbines. Cal-EPA has developed specific cancer potency estimates for assessing their related cancer risks at specific exposure levels. For noncancer-causing toxic air pollutants, Cal-EPA established specific no-effects levels (known as reference exposure levels, or RELs) for assessing the likelihood of producing health effects at specific exposure levels. Such health effects would be considered significant only when exposure exceeds these reference levels. The Energy Commission staff (staff) uses these Cal-EPA potency estimates and reference exposure values in its health risk assessments.

California Health and Safety Code section 44300 et seq. requires facilities, which emit large quantities of criteria pollutants and any amount of noncriteria pollutants to provide the local air district an inventory of toxic emissions. Such facilities may also be required to prepare a quantitative health risk assessment to address the potential health risks involved. The ARB and the Air Quality Management District will ensure implementation of these requirements for the proposed project.

LOCAL

The San Joaquin Unified Air Pollution Control District (SJUAPCD, or the District) has no specific rules implementing Health and Safety Code section 44300. It does, however, require the results of a health risk assessment as part of the application for the Determination of Compliance. HEP has complied with this requirement.

SETTING

According to information from the applicant (HEP 2000a, pages 8.6-1 and 8.6-2), the proposed facility will be located on a ten-acre site within the Hanford city limits in Kings County. The site is located adjacent to an existing cogeneration facility. The surrounding area is sparsely populated as it is zoned for agricultural and industrial uses. The nearest residences are located approximately 0.5 miles away, which is beyond the normal points of maximum impacts for emissions from sources such as HEP. The nearest locations with sensitive receptors (such as children and the elderly) are about 2.5 miles away meaning that exposures would not involve sensitive individuals at higher rates than normal. These sensitive individuals are usually more susceptible than the general population to the effects of environmental pollutants. Therefore, extra consideration is given to possible effects in these individuals in establishing exposure limits for environmental pollutants.

IMPACTS

ENVIRONMENTAL CHECKLIST

PUBLIC HEALTH -- Would the project's operation:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause the surrounding population to be exposed to toxic pollutants at levels hazardous to health?			X	

DISCUSSION OF IMPACTS

A. Less Than Significant Impact

A maximum cancer risk estimate of 0.49 in a million was calculated for all the project's carcinogens. This estimate is significantly less than the one in a million which staff considers significant for sources such as HEP. This means that the project's operation would be unlikely to pose a significant cancer risk to the surrounding population. The San Joaquin Unified Air Pollution Control District considers a risk of 10 in a million as acceptable for a source (such as PEF) in which the best available control technology for air toxics (T-BACT) is used.

A chronic hazard index of 0.022 was calculated for the project's non-carcinogenic pollutants considered together. Their acute hazard index was calculated to be 0.208. Both values are below staff's 1.0 level of significance for the health effects involved.

CUMULATIVE IMPACTS

Staff concludes that there are no cumulative impacts.

CONCLUSIONS

While specific toxic pollutants would be associated with operation of the proposed project, staff's analysis shows that these pollutants will be unlikely to be emitted at levels posing any significant impact to the surrounding population. Therefore, staff does not consider additional mitigation to be necessary.

PROPOSED CONDITIONS OF EXEMPTION

None proposed.

REFERENCES

California Air Resources Board (ARB) 1996. California Toxic Emissions Factors (CATEF) Database for Natural Gas-Fired Combustion Turbine Cogeneration.

California Air Pollution Control Officers Association (CAPCOA) 1993. Air Toxics "Hot Spots" Program, Revised 1992 Risk Assessment Guidelines. Prepared by the Toxics Committee, October 1993.

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SOCIOECONOMICS

Michael Fajans

INTRODUCTION

The technical area of Socioeconomics includes several related areas of interest and concern. A typical socioeconomic impact analysis evaluates the effects of short-term and long-term project-related population changes on local schools, medical and protective services, as well as the fiscal and physical capability of local governmental agencies to meet the needs of project-related changes in population. The socioeconomic analysis also includes consideration of Environmental Justice, a determination of whether any project impacts fall disproportionately on a low-income or minority population.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

Executive Order 12898, "Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

STATE

14 CALIFORNIA CODE OF REGULATIONS, SECTION 15131

- Economic or social factors of a project may be used to determine the significance of physical changes caused by the project.
- Economic, social and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce and or avoid the significant effects on the environment.

SETTING

DEMOGRAPHIC CHARACTERISTICS

The project site is located in the City of Hanford in Kings County. The County, centrally located in the San Joaquin Valley, is bounded by Fresno (north and northwest), Tulare (east), Kern (south), and Monterey Counties (southwest).

Approximately three-quarters of Kings County's estimated 2000 population of 131,200 (California Department of Finance) is located in the four incorporated cities, Avenal, Corcoran, Hanford and Lemoore. Both Hanford, with an estimated 2000 population of approximately 40,000, and the County have grown consistently at about a three percent annual rate, from 1980 population levels of 21,000 and 73,700 respectively. According to the Department of Finance projections for population growth from 1999 to 2000, Kings County, with a growth rate of 4.3 percent, had the greatest percentage growth of any California County during the past year. Hanford's growth rate matched that of Kings County, but there were other cities that witnessed greater proportionate growth from 1999 to 2000.

Fresno County, with an estimated 1999 population of 793,800, and Kern County, with a population of 648,400, are considerably larger and more urban than Kings County. Fresno, approximately 35 miles from Hanford, is the closest large city.

Year 2000 estimates by Claritas, a demographic and marketing firm, suggest that both Kings County and Hanford neighborhoods in the vicinity of the proposed project have seen an influx of Hispanic population, with the County proportion of Hispanic population increasing from 33 percent in 1990 to 43 percent in 2000, and the City ratio increasing from 29 percent to 38 percent (**Socioeconomics Table 1**). Related to this has been a declining proportion of non-Hispanic White population, down by 10-12 percent in every geographic unit considered.

Socioeconomics Table 1.
Demographic Profile Of Hanford And South Hanford Census Tracts: 2000

	Kings County	City of Hanford	Census Tract				
			8	9	10	11	12
Population	126,651	39,141	4,282	7,536	10,526	5,893	2,565
% White (excludes Hispanic)	44%	53%	49%	49%	50%	15%	59%
% Black (excludes Hispanic)	7%	4%	5%	3%	5%	13%	1%
% Asian	4%	4%	4%	3%	5%	7%	1%
% Hispanic origin	43%	38%	42%	45%	40%	65%	40%
Median Household Income	\$28,597	\$30,547	\$29,212	\$22,668	\$31,205	\$20,400	\$31,017
Per Capita Income	\$12,119	\$13,459	\$11,594	\$11,153	\$12,576	\$7,633	\$16,383

Source: Claritas Marketview Comparison Report.

EMPLOYMENT AND ECONOMY

Kings County is an urban county with a substantial agricultural base. In 1999, 19 percent of County jobs were in farm production and farm services. The County is one of California's leading producers of dairy and cotton products (EDD, 2000). Other key sectors of the economy are government (29 percent), trade (17 percent),

and services (14 percent). Three state prisons (Corcoran [2] and Avenal) and the Naval Air Station Lemoore account for many of the state and federal governmental jobs. Hanford is the seat of County government.

Although the EDD employment forecasts for Kings County anticipate a 10 percent employment growth rate from 1995 to 2002, unemployment remains substantial in the County at 13 percent in 1999, down from a peak of 15 percent in 1992-93. This unemployment rate was more than double the state average.

Kings County's construction labor force numbers approximately 1,100, or about three percent of employment. This has grown at a gradual but consistent rate. For major construction projects, the labor pool includes Fresno and Kern Counties, areas with larger populations, labor force, and the members of the trades required for construction of an energy facility.

PROJECT WORK FORCE

CONSTRUCTION WORK FORCE

According to the SPPE Application, the construction of the HEP will require about 14 months, 1,243 person months of labor, including an average of 89 workers and a peak of 129 workers during the 11th month of construction. The tentative schedule would begin in Spring 2001 with completion in summer 2002. Key trades involved (20 or more workers) would include boilermakers, electricians, millwrights, and pipefitters. In addition, the general contractor would have a staff of six on-site for most of the construction period.

"Because Kings County has a small number of construction workers, all construction workers are assumed to be nonlocal. Approximately 40% of the construction workers (52 peak workers) are assumed to come from Fresno or Fresno County and approximately 60% of the construction workers (77 peak workers) are assumed to come from Bakersfield or Kern County. These assumptions are based on the experience of GWF in constructing the existing GWF Hanford cogeneration plant. (Hanford SPPE Application, page 8.8-17)

PLANT OPERATIONS WORKFORCE

According to the applicant, the HEP is expected to share the operating and maintenance staff with the existing adjacent cogeneration plant. (SPPE, page 8.8-18). Thus, no new staff will be required to operate the HEP.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
SOCIOECONOMIC: POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
d) Does a demographic analysis indicate a significant minority or low-income population within a six-mile radius of the project that may be subject to disproportionate adverse effects of the project?				X

DISCUSSION OF IMPACTS

A. No Impact

The proposed Hanford Energy Park Project will require approximately 14 months for construction with a peak construction period during winter and spring of 2002. There would be an average of 89 workers and a five-month peak when 108 to 129 workers would be required. The majority of construction workers are expected to commute daily from the Fresno (35 miles) or Bakersfield (75 miles) area.

B. No Impact

The Kings County 2000 population is estimated at approximately 131,000 with 35,000 households. According to 1990 Census data, there were 1,760 vacant housing units. According to the State Department of Finance, there is a 6.15 percent housing vacancy rate in Kings County in 2000, yielding over 2,000 available housing units (Department of Finance, Table 1 County Population and Housing Estimates). Even if approximately 100 construction workers were to relocate to Kings County, this would comprise only 0.3 percent of the estimated population base, and would have minimal impact on the housing supply.

The proposed Hanford Energy Park is not likely to significantly alter the location, distribution, density, or growth rate of the population of Hanford or Kings County since construction impacts are of short duration. No additional workers will be needed to operate the project that will be adjacent to an existing cogeneration plant.

C. No Impact

No housing or population will be displaced by the proposed project.

D. No Impact

There is a minority and low-income community within two-three miles of the proposed project. The only potential adverse effects of the project on this population would be air quality or public health impacts. Environmental analysis indicates that the proposed project would comply with all regulatory requirements, and thus not have adverse impacts, disproportionate or otherwise.

CUMULATIVE IMPACTS

Staff concludes that there are no cumulative impacts.

CONCLUSIONS

The proposed project would not induce significant population growth in the area, nor would it involve the displacement of housing or people. In addition, no adverse effects on minority or low-income populations would occur. Therefore, the project would not result in any significant adverse impacts to population or housing.

PROPOSED CONDITIONS OF EXEMPTION

None proposed.

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TRAFFIC & TRANSPORTATION

Testimony of Steven J. Brown, P.E.

INTRODUCTION

The traffic and transportation section of the Draft Initial Study provides an independent analysis of the Hanford Energy Park (HEP). Potential impacts related to traffic operations and safety hazards resulting from the construction and operation of the project are discussed.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Federal, state, and local regulations that are applicable to the transportation of hazardous materials are listed below. These regulations are designed to control and mitigate for potential impacts resulting from the transportation of such materials. The applicant has indicated its intent to comply with all federal, state and local regulations related to the transport of hazardous materials.

FEDERAL

- Title 49, Code of Federal Regulations, Sections 171-177, governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- Title 49, Code of Federal Regulations, Sections 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, addresses safety considerations for the transport of goods, materials, and substances over public highways.

STATE

- Section 353 defines hazardous materials. California Vehicle Code, Sections 31303-31309, regulates the highway transportation of hazardous materials, the routes used, and restrictions thereon.
- Sections 31600-31620 regulate the transportation of explosive materials.
- Sections 32000-32053 regulate the licensing of carriers of hazardous materials and include noticing requirements.
- Sections 32100-32109 establish special requirements for the transportation of inhalation hazards and poisonous gases.
- Sections 34000-34121 establish special requirements for the transportation of flammable and combustible liquids over public roads and highways.
- Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5 and 34510-11 regulate the safe operation of vehicles, including those which are used for the transportation of hazardous materials.
- Sections 25160 et seq. addresses the safe transport of hazardous materials.

- Sections 2500-2505 authorize the issuance of licenses by the Commissioner of the California Highway Patrol for the transportation of hazardous materials including explosives.
- Sections 13369, 15275, and 15278 address the licensing of drivers and the classifications of licenses required for the operation of particular types of vehicles. In addition, the possession of certificates permitting the operation of vehicles transporting hazardous materials is required.

LOCAL

The Kings County Hazardous Waste Management Plan specifies goals for the safe and effective transfer of hazardous wastes through the county.

SETTING

The major highways in the area of the project site are State Route 99 (SR), SR 198, and SR 43. The local roadways affected by the proposed project are Idaho Avenue and 8th Avenue (SR 43). These local roads would provide connections to the project site from SR 198.

The project site is located on Idaho Avenue adjacent to the existing GWF power plant. Idaho Avenue extends from the eastern Kings County limits at 1st Avenue to its terminus at 19th Avenue. Near the site, Idaho Avenue is approximately 30 feet wide (two 12-foot travel lanes and 3-foot paved shoulders) with a posted speed limit of 50 MPH. This facility is under the jurisdiction of Kings County between 10th and 11th Avenue and is classified as a two-lane arterial roadway carrying approximately 1,300 vehicles per day. The proposed HEP site is served primarily from access points along Idaho Avenue.

State Route 198 is a four-lane highway and provides access to the project site via 8th Avenue (SR 43). SR 198 is an east-west highway that traverses the length of Kings County and is under the jurisdiction of the California Department of Transportation (Caltrans). Between 10th and 11th Avenue, SR 198 carries approximately 14,000 vehicles per day.

State Route 99 is the primary north-south travel route in the county. SR 99 is a four-lane facility and carries approximately 39,000 vehicles per day at its junction with SR 198. SR 43 is a two-lane north-south expressway located west of SR 99 and runs along the eastern boundary of the City of Hanford carrying approximately 7,600 vehicles per day at its junction with SR 198.

The proposed HEP site is located directly adjacent to the Burlington Northern and Santa Fe Railway, which crosses Idaho Avenue directly east of the project. This railroad crossing is equipped with standard railroad grade crossing warning equipment.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION/TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				X
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?		X		
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?		X		
g) Create a significant hazard to the public or the environment through the routine transportation of hazardous material?				X

DISCUSSION OF IMPACTS

A. No Impact

The project is expected to generate 178 daily trips (89 round trips) during the average construction period and 258 daily trips (129 round trips) during the peak construction period. Operation of the HEP will be run by personnel at the adjacent existing GWF facility, and therefore will not require additional personnel.

According to Set 2 of the Data Request Responses, the existing daily level of service is "D" on SR 99 (60 miles south of and 21 miles north of SR 198), and "C" on SR 43 (15 miles north of SR 198). Information provided by URS Corporation indicates that SR 198 operates at LOS C between SR 99 and SR 43. The daily

project construction traffic on SR 99, SR 198, and SR 43 would add less than one-half of one percent to the total traffic on these routes during the construction phase.

B. Less than Significant with Mitigation Incorporated

The addition of HEP project traffic will have little, if any effect on the existing average levels of service of these highway sections. Each highway facility is expected to operate at an acceptable level of service (i.e., LOS D or better according to the Circulation Element of the City of Hanford General Plan and the Kings County General Plan) with the addition of project construction traffic.

The intersections of SR 198/SR 43 westbound off-ramp, Idaho Avenue/SR 43, and Idaho Avenue/10th Avenue operate at LOS B or better under existing conditions. The addition of project traffic would result in an increase of 11 to 27 percent at these intersections, thereby degrading the level of service to LOS B at the intersection of SR 198/SR 43 westbound off-ramp, LOS C at Idaho Avenue/SR 43, and LOS B at Idaho Avenue/10th Avenue. However, these resulting levels of service are within both the Kings County and City of Hanford service level standards, and therefore no traffic impacts would occur.

All affected roadways and intersections will experience no significant and/or adverse impacts from this project as all have sufficient capacity to absorb all project-generated traffic. Increases in traffic volumes on the affected highways, roadways and intersections would only occur on a temporary basis (i.e., during the construction phase of the project). No traffic impacts would result during operation of the HEP since no additional employee trips are expected.

C. No Impact

The HEP has no major commercial aviation center in the area. The closest airport is the Hanford Municipal Airport that is approximately four miles from the proposed project transmission line. The transmission structures are 70-feet high and will not penetrate the aviation “regulatory surface” as defined by the Federal Aviation Administration therefore it should not impact air traffic safety.

D. No Impact

According to Set 2 of the Data Request Responses, traffic resulting from the construction of the HEP will not affect public safety. All city roads have a standard turning radius of 30 feet and observation of the project area indicates that adequate sight distance is available at all study intersections.

Immediate access to the HEP site would be provided by the existing GWF power plant driveways located on Idaho Avenue. The frontage of the existing site provides a turnout approximately 11 feet in width that serves as an acceleration/deceleration lane to accommodate westbound vehicles entering and exiting the site via right-turns. Although left-turn lanes are not provided to accommodate vehicles turning left into the site, excessive delays are not expected from this movement due to the relatively low level of existing traffic on Idaho Avenue.

E. No Impact

The roadways impacted by construction are maintained at a LOS acceptable to Caltrans and the City of Hanford therefore the project should have adequate emergency access.

F. Less Than Significant with Mitigation Incorporated

According to the Application for Small Power Plant Exemption (SPPE), parking for construction personnel and visitors is to be provided in an area on or adjacent to the HEP site. However, observation of the project area indicates only a short supply of paved parking is available on the existing GWF power plant site. A large parking lot on the south side of Idaho Avenue exists, although this is a private lot operated by the Pirelli Tire plant. Plenty of open space immediately to the east of the site exists (where the HEP is proposed) and may be available for parking areas. Therefore, during the construction of the power plant and all related facilities, a policy that all project-related parking occurs in designated parking areas should be enforced so as to avoid parking on Idaho Avenue where on-street parking is limited.

G. No Impact

The construction and operation of the plant will require the transportation of various hazardous materials including aqueous ammonia, sodium hypochlorite, liquid carbon monoxide, liquid nitrogen, diesel fuel, lube oils, etc. According to the SPPE, the transport of such materials will involve the use of SR 198, SR 99, Idaho Avenue and 11th Avenue. The transport of hazardous materials over city streets has the potential to result in an increase in traffic hazards. HEP has indicated that the transportation of hazardous material to and from the site will be conducted in accordance with California Vehicle Code Section 31300. If the applicant follows the LORS for handling and transportation of hazardous material as discussed further in the hazardous material section of the initial study no significant impact is expected.

CUMULATIVE IMPACTS

Staff concludes that there are no cumulative impacts.

CONCLUSIONS

Provided the applicant establishes a traffic and transportation system policy to avoid on-street parking and follows all LORS acceptable to Caltrans and the City of Hanford for the handling of hazardous materials, the project will result in less than significant impacts.

PROPOSED CONDITIONS OF EXEMPTION

TRANS-1 During construction of the power plant and all related facilities, the project owner shall manage on-site and off-site construction-period parking.

Verification: At least 60 days or a lesser period of time mutually agreed to by the Compliance Project Manager and the project owner, prior to any earth moving or disturbance activity, the project owner shall submit a parking and staging plan for all phases of project construction to King County and the City of Hanford for review and comment and to the CPM for review and approval.

TRANS-2 The project owner shall ensure that all federal and state regulations for the transportation of hazardous materials are observed.

Verification: The project owner shall include in its Monthly Compliance Reports copies of all permits and licenses acquired by the project owner and/or subcontractors concerning the transportation of hazardous substances.

REFERENCES

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TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelum, Ph.D.

INTRODUCTION

The transmission line for the proposed Hanford Energy Park (HEP) is a 1.7 mile-long single-circuit overhead 115 kV line connecting to the existing Pacific Gas and Electric (PG&E) Henrieta-Kingsburg 115 kV transmission line. The proposed transmission line will exit west along Idaho Avenue from the HEP's 115-kV switchyard, turn south, run along the east side of 11th Avenue, and enter the new off-site switchyard. The new off-site switchyard will be located on a one-acre parcel on the northeast corner of Jackson Avenue and 11th Avenue. Since the line is within the PG&E service area, it will be designed according to existing PG&E guidelines and construction practices reflecting compliance with applicable laws, ordinances, regulations and standards (LORS), as noted by the applicant (HEP 2000a, page 6-29). The purpose of this analysis is to assess the proposed construction and operational plan for incorporation of the measures necessary for such compliance.

Staff's analysis will focus on the following issues, which relate primarily to the physical presence of the line, or secondarily to the physical interactions of line electric and magnetic fields.

- Aviation safety;
- Interference with radio-frequency communication;
- Audible noise;
- Fire hazards;
- Hazardous shocks;
- Nuisance shocks; and
- Electric and magnetic field (EMF) exposure.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The physical presence of the proposed line could pose an aviation hazard to area aviation if the line protrudes high enough into the navigable air space or is located close enough to area airports. The potential for such a hazard is addressed through the following LORS:

- Title 14, Part 77 of the Federal Code of Regulations (CFR), "Objects Affecting the Navigation Space." Provisions of these regulations specify the criteria used by the Federal Aviation Administration (FAA) for determining whether a "Notice of Proposed Construction or Alteration" is required for potential obstruction hazards. The need for such a notice depends on factors related to the height of the structure, the slope of an imaginary surface from the end of nearby runways to the top of the structure, and the length of the runway involved. Such

notification allows the FAA to ensure that the structure is located to avoid any significant hazards to area aviation.

- FAA Advisory Circular (AC) No. 70/460-2H, "Proposed Construction and or Alteration of Objects that may Affect the Navigation Space." This circular informs each proponent of a project that could pose an aviation hazard of the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA.
- FAA AC No. 70/460-1G, "Obstruction Marking and Lighting". This circular describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
- The physical interactions of electric fields from transmission lines could produce audible noise, while interfering with radio-frequency communication in the area. Such impacts are prevented or mitigated through compliance with the following regulations and practices:
 - Federal Communications Commission (FCC) regulations in Title 47 CFR, Section 15.25.
 - General Order 52 (GO-52), California Public Utilities Commission (CPUC). Industry design standards and maintenance practices.
 - Fire hazards from overhead transmission line operation are mostly related to sparks from conductors of overhead lines or direct contact between the line and nearby trees and other combustible objects. Such fires are prevented through compliance with the following regulations:
 - General Order 95 (GO-95), CPUC, "Rules for Overhead Electric Line Construction" specifies tree-trimming criteria to minimize the potential for power line-related fires.
 - Title 14 Section 1250 of the California Code of Regulations, "Fire Prevention Standards for Electric Utilities" specifies utility-related measures for fire prevention.
 - All transmission operations pose a risk of hazardous or nuisance shocks to humans. These hazardous shocks are those possible from direct or indirect contact between an individual and the energized line. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines. The nuisance shocks by contrast, are caused by current flow at levels generally incapable of causing significant physiological harm. They result most commonly from contact with a charged metallic object in the transmission line environment. The following regulations are intended to prevent such shocks:
 - GO-95, CPUC. "Rules for Overhead Line Construction". These rules specify uniform statewide requirements for overhead line construction regarding ground clearance, grounding, maintenance and inspection. Implementing these requirements ensures the safety of the general public and line workers.

- Title 8, CCR, Section 2700 et seq., “High Voltage Electric Safety Orders”. These safety orders establish essential requirements and minimum standards for safely installing, operating, and maintaining electrical installations and equipment.
- National Electrical Safety Code, Part 2: Safety Rules for Overhead Lines. Provisions of this code are intended to minimize the potential for direct or indirect contact with the energized line.
- The National Electrical Safety Code and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE).

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
TRANSMISSION LINE SAFETY AND NUISANCE -- Would project operation:				
a) Pose an aviation hazard to area aircraft?			X	
b) Lead to interference with radio-frequency communication?		X		
c) Pose a hazardous or nuisance shock hazard?		X		
d) Pose a fire hazard?		X		
e) Expose humans to higher electric and magnetic field levels than justified by existing knowledge?		X		

DISCUSSION OF IMPACTS

A. Less Than Significant Impact

As noted by the applicant (HEP 200a, page 6-18), there are no major aviation centers in the general vicinity of the project and its related line. Fresno air terminal is more than 40 miles to the northeast. Lemoore Naval Air Station is approximately 10 miles to the west. The smaller local airport, the Hanford Municipal Airport is within 4 miles of the line. However, its runway is more than 3 miles away at the nearest point. Furthermore, the 70-foot height of the transmission lines is not high enough under existing FAA rules to be considered a navigation hazard. This means that a Notice of Construction or Alteration would not be required. However, the applicant will file this notice with the FAA as is customary for all new transmission lines.

B. Less Than Significant with Mitigation Incorporated

According to the applicant (HEP 2000a, pages 6-18 through 6-23) the proposed line will be designed to reduce the electric field-related interactions responsible for the radio noise in question. Moreover, the underlying field interactions are mostly

associated with lines of 345 kV or higher, not the lower-voltage lines such as proposed (EPRI 1982). The applicant however, intends to mitigate any related complaints whenever they are lodged. Staff recommends a specific condition of exemption (TLSN-2) to ensure such mitigation.

C. Less Than Significant with Mitigation Incorporated

The issue of concern to staff is the likelihood of a fire hazard from operation of the proposed line. The applicant (HEP 2000a, page 6-33) intends to comply with applicable regulations that are intended to ensure that the line is adequately located away from trees and other combustible objects and materials to prevent fires or minimize such fires when they occur. Staff recommends two conditions of exemption (TLSN-1 and TLSN-4) to ensure the distancing and fire prevention measures assumed.

D. Less Than Significant with Mitigation Incorporated

The applicant (HEP 2000a, pages 6-12, 6-31 and 6-32) intends to comply with the requirements of applicable regulations and standards intended to prevent hazardous or nuisance shocks to humans. Staff's recommended Conditions of exemption, TLSN-1 and TLSN-5 will ensure such compliance.

E. Less Than Significant with Mitigation Incorporated

Exposure to power-frequency electric and magnetic fields is capable of biological impacts at levels orders of magnitude higher than encountered in the power line environment. As noted by the applicant (HEP 2000a, pages 6-26 and 6-27), such power line fields have not been established as capable of significant biological effects in exposed humans. The CPUC has established specific design requirements for dealing with such fields in light of present knowledge. The question of concern to staff is whether the proposed line's field reducing design is adequate to maintain possible human exposures within limits reflected in CPUC's requirements on the issue.

As noted by the applicant, (HEP 2000a, pages 6-25 through 6-27), the maximum electric field strength at the edge of the right-of-way will be 0.7 kV/m. This is within the range for PG&E lines of the same voltage. The maximum magnetic field strength will be approximately 35 mG at the edge of the right-of-way, diminishing to less than 1 mG 200 feet from the center. These magnetic field strengths are within the range expected for PG&E lines of the same voltage and current-carrying capacity. As noted by the applicant (HEP 2000a, page 6-28) these line electric and magnetic field strengths are much lower than the limits established by the relatively few states with regulatory limits. Staff's recommended conditions of exemption (TLSN-1 and TLSN-3) will ensure that the line's field strengths will be within the levels assumed.

CUMULATIVE IMPACTS

Staff concludes there are no cumulative impacts

CONCLUSIONS

Staff has determined that the proposed line will be designed and operated in compliance with all applicable LORS. The following conditions of exemption are recommended to ensure implementation of the design and operational measures involved.

PROPOSED CONDITIONS OF EXEMPTION

TLSN-1 The project owner shall construct the proposed transmission line according to the requirements of CPUC's GO-95, GO-52, applicable sections of Title 8, Section 2700 et seq. of the California Code of Regulations and PG&E's EMF-reduction guidelines arising from CPUC Decision 93-11-013.

Verification: Thirty days before starting construction of the transmission line or related structures and facilities, the project owner shall submit to the Commission's Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming compliance with this requirement.

TLSN-2 The project owner shall ensure that every reasonable effort will be made to identify and correct, on a case-specific basis, any complaints of interference with radio or television signals from operation of the project-related lines and associated switchyards.

The project owner shall maintain written records for a period of five years, of all complaints of radio or television interference attributable to operation together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action, or for which there was no resolution should be noted and explained. The record shall be signed by the project owner and also the complainant, if possible, to indicate concurrence with the corrective action or agreement, with the justification for a lack of action.

Verification: All reports of line-related complaints shall be summarized for the project-related lines and included during the first five years of plant operation in the Annual Compliance Report.

TLSN-3 The project owner shall engage a qualified consultant to measure the strengths of the line electric and magnetic fields from the line before and after they are energized. Measurements should be made at representative points along the edge of the right-of-way for which field strength estimates were provided.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

TLSN-4 The project owner shall ensure that the right-of-way of the project-related lines are kept free of combustible material, as required under the provisions of Section 4292 of the Public Resources Code and Section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report.

TLSN-5 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards.

Verification: At least 30 days before the line is energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

REFERENCES

- HEP (Hanford Energy Park) 2000a. Application for Certification, Volumes I and II. Submitted to the California Energy Commission on November 30, 1999.
- Electric Power Research Institute (EPRI) 1982. Transmission Line Reference Book: 345 kV and Above
- Energy Commission Staff 1992. High Voltage Transmission Lines: Summary of Health Effects Studies. California Energy Commission Publication, P700-92-002
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TRANSMISSION SYSTEM ENGINEERING

Linda Davis and Al McCuen

INTRODUCTION

The Transmission System Engineering (TSE) analysis provides the basis for the findings in the Energy Commission's decision for the Small Power Plant Exemption (SPPE) from certification. Under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the project," which may include facilities not licensed by the Energy Commission (CCR, tit. 14, §15378). Therefore, the Energy Commission must identify and evaluate the environmental effect of construction and operation of any new or modified transmission facilities beyond the project's interconnection with the existing transmission system that are required as a result of the power plant addition to the California transmission system. This staff assessment indicates whether or not the applicant has accurately identified all interconnection facilities.

The GWF Power Systems Company (GWF), the applicant, proposes to connect their project, the Hanford Energy Park (HEP), to the Pacific Gas & Electric Company (PG&E) transmission system. Staff's TSE analysis evaluates the power plant switchyard, outlet line, termination facilities and outlet alternatives identified by the applicant.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), "Rules for Overhead Electric Line Construction," formulates uniform requirements for construction of overhead lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance, operation or use of overhead electric lines and to the public in general.
- CPUC Rule 21 provides standards for the reliable connection of parallel generating stations connected to participating transmission owners.
- Western Systems Coordinating Council (WSCC) Reliability Criteria provides the performance standards used in assessing the reliability of the interconnected system. These Reliability Criteria require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. The WSCC Reliability Criteria includes the Reliability Criteria for Transmission System Planning, Power Supply Design Criteria, and Minimum Operating Reliability Criteria. Analysis of the WSCC system is based to a large degree on WSCC Section 4 "Criteria for Transmission System Contingency Performance," which requires that the results of power flow and stability simulations verify established performance levels. Performance levels are defined by specifying the allowable variations in voltage, frequency and loading that may occur on systems other than the one in which a disturbance originated. Levels of performance range from no significant adverse effect outside a system

area during a minor disturbance (loss of load or a single transmission element out of service) to a performance level that only seeks to prevent system cascading and the subsequent blackout of islanded areas during major disturbances (such as loss of all lines in a right of way). While controlled loss of generation, load, or system separation is permitted in extreme circumstances, their uncontrolled loss is not permitted (WSCC 1998).

- North American Electric Reliability Council (NERC) Planning Standards provides policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. With regard to power flow and stability simulations, these Planning Standards are similar to WSCC's Criteria for Transmission System Contingency Performance. The NERC planning standards provide for acceptable system performance under normal and contingency conditions; however, the NERC planning standards apply not only to interconnected system operation but also to individual service areas (NERC 1998).
- Cal-ISO Reliability Criteria also provide policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. With regard to power flow and stability simulations, these Planning Standards are similar to WSCC's Criteria for Transmission System Contingency Performance and the NERC Planning Standards. The Cal-ISO Reliability Criteria incorporate the WSCC Criteria and NERC Planning Standards. However, the Cal-ISO Reliability Criteria also provide some additional requirements that are not found in the WSCC Criteria or the NERC Planning Standards. The Cal-ISO Reliability Criteria apply to all existing and proposed facilities interconnecting to the Cal-ISO controlled grid.

SETTING

The HEP site is adjacent to the existing Hanford cogeneration plant in the King's Industrial Park on the southern border of the City of Hanford, California. The applicant plans to design, construct, own, and maintain a 13.8/115 kV substation at the HEP site. The HEP will interconnect through a new transmission line which traverses 1.36 circuit-miles south of the site and connects with the existing PG&E Henrietta-Kingsburg 115 kilovolt (kV) transmission line. The route originally proposed traversed along the rail corridor and terminated at a new switchyard on the southwest corner of the Burlington Northern & Santa Fe (BGNST) Railroad and Jackson Avenue intersection proved infeasible. Thus, the originally proposed alternative route is discussed as the preferred alternative. (HEP 2000b.) The selection of the originally proposed alternative route as the preferred route has no effect on the system reliability analysis conducted for this project since the route does not significantly change the electrical configuration of the interconnection.

The preferred alternative for the proposed new line is a new 1.36-mile single circuit 115 kV transmission line which traverses west from the GWF Hanford substation on Idaho Avenue and then south along the eastern edge of 11th Avenue, terminating in a new PG&E switchyard located at the northeast corner of the intersection of Jackson Avenue and 11th Avenue. A short outlet line would be required to connect

the new switchyard and the existing Henrietta-Kingsburg 115 kV transmission line. (HEP 2000a, page 5-11 and page 1-11).

In addition to the interconnection facilities, a rerate of the 6.5-mile circuit from Kingsburg to McCall will be required. This rerate involves some minor changes to existing circuit equipment located within the fence lines and right-of-way of the existing Kingsburg to McCall circuit and related PG&E substations.

ANALYSIS

INTERCONNECTION FACILITIES

Three separate facilities are proposed to provide a reliable connection to PG&E's existing 115 kV system. These outlet facilities consist of a new single circuit 115 kV outlet transmission line, a new PG&E 115 kV switchyard and the project substation. To accommodate the power output of the project, approximately 6.5 linear miles of PG&E's existing 115 kV Kingsburg-McCall line will be rerated.

SUBSTATION AND SWITCHYARD

The project substation is to be located on the south side of the project site. The substation will include transformers that will transform the outputs from the combustion turbine and steam turbine generators from 13.8 kV to 115 kV through individual, dedicated oil-filled three-phase step up transformers. The substation will also consist of an air-break disconnect switch and use a three-breaker bus configuration utilizing SF6 circuit breakers. Surge arrestors will be provided at the high-voltage bushings of the transformer to protect against lightning and other surges. The substation will be designed in accordance with applicable industry standards and all elements will be rated for 3,000 Amperes continuous current (HEP 2000a, pages 6-2 and 6-3).

The proposed PG&E Hanford switchyard will be located about 1.36 miles from the HEP site, on a one acre parcel on the northeast corner of Jackson Avenue and 11th Avenue. The switchyard will be a switching station (no transformers) and will utilize a three-breaker position bus configuration. Two of the three bus positions will be used to loop the existing single circuit 115 kV Henrietta-Kingsburg transmission line through the station. The other will be used for the single circuit 115 kV HEP outlet transmission line.

The switchyard will be designed with applicable industry standards and have a nominal voltage of 115 kV and continuous current rating of 3,000 Amperes. The design will incorporate PG&E design criteria and be in compliance with CPUC GO-95. (HEP 2000a, pages 6-9 and 6-10.)

TRANSMISSION LINE

The proposed line will be a 115 kV single circuit overhead line. The circuit will traverse west from the GWF Hanford substation on Idaho Avenue and then south along the eastern edge of 11th Avenue, terminating in a new PG&E switchyard

located at the northeast corner of the intersection of Jackson Avenue and 11th Avenue. A 1.36 mile outlet line would be required to connect the new switchyard and the existing Henrietta-Kingsburg 115 kV transmission line. (HEP 2000b.) The circuit functions as a radial tie and adds no additional transmission capacity to the existing system. Each phase of the three-phase line will be made of 1113 kilo-circular-mills (KCM) all aluminum conductor (AAC), named "Marigold," which is a standard PG&E conductor that is presently installed on the existing 115 kV circuit that will accommodate the interconnection. The normal rating for the conductor at 115 kV is 207 mega-volt-amperes (MVA) at unity power factor. (HEP 2000a, page 6-9.) This configuration of conductors and support structures is acceptable and complies with CPUC GO-95.

RERATE AND OTHER DOWNSTREAM IMPACTS

The project impacts on the transmission system downstream of the interconnection facilities is discussed in the System Reliability section. The impacts of the project on the system require that approximately 6.5 linear miles of PG&E's existing 115 kV Kingsburg-McCall line will need to be rerated. Short-circuit studies indicate that equipment in adjacent substations will be significantly affected and relays need to be replaced to protect the equipment (HEP 2000a, Appendix A). This work and any equipment replacement will occur inside the fence lines of the existing substations in accordance with PG&E substation design criteria.

SYSTEM RELIABILITY

INTRODUCTION

A system reliability study is performed to determine the affects of connecting a new power plant to the existing electric grid. The study identifies impacts and also ways negative impacts can be minimized or negated. Any new transmission facilities such as the power plant switchyard, the outlet line, and downstream facilities, required for connecting a project to the grid are considered part of the project and are subject to environmental review during the SPPE process. The Cal-ISO has reviewed the Detailed Facilities Study and Supplemental Studies for the HEP project. Considering the comments of the ISO, Energy Commission staff does not anticipate the need for any new major facilities beyond those identified to be located at the HEP substation and PG&E Hanford switchyard, within existing PG&E transmission corridors, and those within the fence lines of the affected substations.

SYSTEM RELIABILITY STUDY

A system reliability evaluation determines whether the new project would cause thermal overloads, voltage violations (voltages too high or low), and/or electric system instability (excessive oscillations). In addition to the above analysis, studies may be performed to verify that sufficient reactive power is available. The reliability evaluation must be conducted for all credible "emergency" conditions. Emergency conditions could include the loss of a single or double circuit line, the loss of a transformer or generator, or a combined loss of these facilities. A Preliminary Facilities Study is conducted in advance of potential system changes, such as the addition of the project into the system, in order to prevent criteria violations. The

criteria used in this evaluation include the WSCC Planning Criteria, NERC Planning Standards and applicable Cal-ISO reliability criteria. The reliability implications of the project and the need for additional facilities are determined by the Cal-ISO based on the Detailed Facilities Study. A preliminary determination of compliance with applicable reliability criteria has been provided by the Cal-ISO (Cal-ISO 2000a).

SCOPE OF RELIABILITY STUDIES

The HEP is modeled with a maximum plant delivery of 102 MW for the purpose of power flow analysis. PG&E performed power flow, short circuit and stability studies with and without insertion of the project into the system to determine conformance with reliability criteria. These studies model conditions that place significant stress on the relevant transmission system facilities to evaluate the effect of inserting the project power into the existing system. The study results provide snapshots of highly stressed operation and are not illustrative of month to month or day to day operation.

Based on the Detailed Facility Studies and Supplemental Studies, the Cal-ISO has granted preliminary approval to the interconnection (Cal-ISO 2000a). The PG&E Detailed Facilities Study Report and Supplemental Studies show that power delivered from the HEP to the PG&E 115 kV system will affect power flows on existing transmission lines in the region. Power flow studies were based on the assumption that the project would be completed and generating power in the summer of 2002. As a result, the 2002 cases used as a basis for the studies are considered valid for the purpose of the ISO and TSE analysis, which evaluated the effects of the HEP for three cases (HEP 2000a, Appendix A.) as follows:

1. Heavy summer 2002 full loop base case
2. Summer off peak 2002 full loop base case
3. Light Winter 2002 full loop base case

The studies utilized the above listed cases to identify normal and contingency impacts under light spring, heavy summer and light winter conditions.

POWER FLOW STUDY RESULTS

The power flow study results indicate that under most likely conditions all electric facilities would operate within their rated levels and voltages were within required ranges for the transmission interconnection. Emergency overloads occur on existing facilities when the loading exceeds 100% of the facility emergency ratings. Single contingencies model the system assuming an element out of service, such as a line outage or transformer failure. Single contingencies were modeled with the HEP in service and out of service. Facilities found to exceed emergency ratings were the McCall-Kingsburg No. 1 and 2 lines. The No. 1 overload occurs when the No. 2 line is out, and the overload of the No.2 line occurs when the No. 1 line is out. Replacing relays within the substation fence at Kingsburg mitigates these overloads. An outage of the No. 2 line when the Kingsburg cogenerating station is off line causes an overloading of the No. 1 line. Rerating the line will mitigate this.

Rerating involves minor change outs of equipment within the PG&E Kingsburg-McCall 115 kV transmission line ROW and within fence lines of existing substations. Staff concludes that the implications are that the HEP not require major system additions beyond the interconnection facilities which would trigger the need for environmental review.

SHORT CIRCUIT STUDY RESULTS

Short circuit analyses are conducted to assure that existing and proposed breaker ratings are sufficient to withstand high levels of current during a fault (such as when a line touches the ground). Short-circuit studies indicate that, when the HEP project is connected to the system, equipment in adjacent substations is significantly affected and relays need to be replaced to protect the equipment. (HEP 2000a, Appendix A). This work and any equipment replacement will occur inside the fence lines of the existing substation in accordance with PG&E substation design criteria. The fault duty studies were based on parameters provided by the applicant. The results could be significantly different if the actual parameters differ substantially from the data used in the Detailed Facilities Study. However, since circuit breaker replacement and new relays are considered a “within the fence” change for the project, the determination of actual parameters until after the Energy Commission’s decision on project certification is acceptable. The Cal-ISO preliminary Letter of Approval notes that no short circuit problems were identified that affect the approval of the project. (Cal-ISO 2000a.)

STABILITY STUDY RESULTS

Stability studies were performed to ensure that the transmission system remains stable during normal and abnormal operating conditions with HEP connected to the system. There were no stability or post-transient problems identified (ISO 2000a).

CAL-ISO REVIEW

The Cal-ISO has reviewed HEP’s submittals and issued a preliminary letter of approval for the project. The Cal-ISO preliminary Letter of Approval notes that no short circuit or stability problems were identified that affect the approval of the project. The letter indicates that downstream impacts on the Kingsburg-McCall #1 line may require that the circuit be reconductored or rerated (Cal-ISO 2000a). After consultation with PG&E, Energy Commission staff concludes that a rerate of the circuit is preferred and that the reconductor will not be required to accommodate the HEP. Some additional studies were identified by the Cal-ISO that should be completed prior to final interconnection approval. No downstream facilities not already identified would likely be required as a result of these additional studies. The Cal-ISO will provide testimony as required on the Detailed Facilities Study Report and Supplemental Studies, will discuss the conclusions and analysis of the additional information requested in the preliminary approval letter, and will provide conclusions and findings in the Energy Commission’s hearings. The Cal-ISO final Interconnection approval will assure conformance with NERC, WSCC and Cal-ISO reliability criteria.

ALTERNATIVE TRANSMISSION LINE ROUTES

The applicant considered a 1.7-mile double circuit 115 kV alternative transmission line. (HEP 2000b.) This alternative would require double circuit towers and circuitry, however the route is unchanged from the proposed transmission configuration. The breakers at the 115 kV switchyard would not be required. Another configuration that might be considered would be a simple tap of the single circuit interconnection into the existing 115 kV system, thus avoiding the 115 kV switchyard proposed for the project. The above alternatives are considered by staff to be feasible and acceptable alternatives that will not require additional TSE analysis for certification.

CUMLATIVE IMPACTS

There are no cumulative environmental impacts resulting from this project relative to the Transmission System Engineering.

CONCLUSIONS

Staff concludes that a new HEP substation, a new 115 kV single circuit outlet, and a new 115 kV switchyard will be required for interconnection of the HEP to meet NERC, WSCC, and Cal-ISO reliability criteria. No significant new downstream facilities are required. The Cal-ISO will confirm staff's conclusion upon issuance of the final interconnection approval. The power plant switchyard, outlet lines, and termination are acceptable and will comply with LORS. The Transmission System Engineering analysis provides the basis for the findings in the Energy Commission's decision for the Small Power Plant Exemption from certification. Staff be leaves that the project would not result in any significant impacts.

PROPOSED CONDITIONS OF EXEMPTION

No Conditions of Exemption are proposed.

REFERENCES

- Cal-ISO (California Independent System Operator). 1998a. Cal-ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.
- Cal-ISO (California Independent System Operator). 1998b. Cal-ISO Dispatch Protocol posted April 1998.
- Cal-ISO (California Independent System Operator) 2000a, California ISO's preliminary approval letter and comments regarding the HEP PG&E Supplemental Studies and Detailed Facilities Study Report. Letter from Jeff Miller to Sherman Chen, dated July 26,2000.
- HEP (Hanford Energy Park) 2000a. Application for Certification, Hanford Energy Park (00-AFC-3). Submitted to the California Energy Commission, May, 2000.
- HEP (Hanford Energy Park) 2000b. Record of Conversation presenting details of the new preferred transmission line route, December 6, 2000.
- NERC (North American Electric Reliability Council). 1998. NERC Planning Standards, September 1997.
- WSCC (Western Systems Coordinating Council) 1997. Reliability Criteria, August 1998.

PROPOSED NEGATIVE DECLARATION

Testimony of Jack Caswell

PROJECT DESCRIPTION

GWF Power Systems Company, Inc. (GWF), filed a request for a Small Power Plant Exemption (SPPE) with the California Energy Commission on May 19, 2000. GWF's proposed Hanford Energy Park (HEP) project consists of the construction and operation of a 98.7-megawatt (MW) natural gas-fired combined cycle power plant. The HEP plant would occupy approximately five acres and would be located adjacent to an existing GWF Power Systems Company power plant in the Kings Industrial Park within the City of Hanford. The proposed power plant will be a cogeneration power plant using natural gas producing two forms of energy: electricity and thermal energy (steam).

HEP would be operated as a merchant power facility, selling its energy via direct sales agreements and in the spot market via the California Power Exchange. Energy output and operational levels would vary according to demand in the deregulated California energy market. Electricity prices and operational levels would not be subject to California Public Utilities Commission (CPUC) regulation. In addition, HEP could provide cost effective cogenerated steam to meet the future needs of the Kings Industrial Park located adjacent to proposed project.

PROPOSED FINDINGS

The Hanford Energy Park proposed by the GWF Power Systems Company will not have a significant impact on the public or environment provided staffs suggested mitigation measures and conditions of exemption are implemented. The attached Initial Study documents this finding.

MITIGATION MEASURES

Several areas have been identified in the Environmental Checklist portion of the Initial Study as having less than significant impacts with mitigation measures. These areas are: aesthetics, air quality, cultural resources, hydrology and water quality, and noise. For all of these areas, the Energy Commission staff concludes that the mitigation measures and conditions of exemption incorporated into the project will ensure that the impacts are not significant.

Dated: _____

PREPARATION TEAM

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Project Secretary	Mary Dyas
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Aesthetics	William Kanemoto
Air Quality	Nasrine Behmanesh & William Walters
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Cultural Resources	Jeanette McKenna
Energy Resources	Steve Baker
General Conditions of Exemption	Bob Eller
Geology, Paleontology, Soils, and Mineral Resources	Robert Anderson
Hazardous Materials and Waste.....	Ramesh Sundareswaran & Michael Ringer
Hydrology and Water Quality.....	Richard Sapudar and Robert Anderson
Introduction.....	Jack Caswell
Land Use and Recreation	Patrick Angell
Noise	Thomas Murphy
Project Description	Jack Caswell
Proposed Negative Declaration	Jack Caswell
Public Health	Obed Odoemelum
Socioeconomics	Michael Fajans
Traffic and Transportation	Steven J. Brown
Transmission Line Safety and Nuisance	Obed Odoemelum
Transmission System Engineering	Linda Davis & Al McCuen